# INTERNATIONAL ONLINE JOURNAL OF EDUCATIONAL SCIENCES

ISSN:1309-2707

Volume 13 Issue 5 November 2021



iojes

www.iojes.net

International Online Journal of Educational Sciences

IOJES is an international, peer-reviewed scientific journal (ISSN:1309-2707) is published five times annually-in March, May, July, September and November.

Volume 13, Issue 5, Year November – 2021



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**Publication Type:** Published in March, May, July, September and November.

**Indexing**

Education Abstract (H. W. Wilson)
Education Full Text (H.W. Wilson)
Turkish Education Index (TEI)
EBSCO host Educational Sources
ERA Routledge
The Asian Education Index
Cite Factor
Index Copernicus

**Language editing**
Language redactions of the papers are made by professional licensed institutions.

International Online Journal of Educational Sciences

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**INDEX**



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International Online Journal of Educational Sciences

ISSN: 1309-2707

# An Investigation of the Predictive Roles of Self-Compassion and Mindfulness on Test Anxiety among Turkish Adolescents

*Research Article*

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**To cite this article:** Dinc, Z., & Oguz-Duran, N. (2021). An investigation of the predictive roles of self-compassion and mindfulness on test anxiety among Turkish adolescents**,** *International Online Journal of Educational Sciences, 13*(5), 1292-1309.

ARTICLE INFO

*Article History*:

Received: 26.05.2020

Available online: 20.10.2021

ABSTRACT

This study was aimed to examine the relationship between self-compassion, mindfulness and test anxiety among Turkish adolescents. Data were collected from 646 high school students, by using the Test Anxiety Inventory (TAI), the Self- Compassion Scale (SCS), the Mindfulness Attention Awareness Scale (MAAS) and the Personal Information Form. First, the grade level and gender effects on test anxiety were examined. Then, the predictive roles of these two variables on test anxiety together with self-compassion and mindfulness were investigated. Independent Samples t-test, One-Way ANOVA, and Multiple Linear Regression were run. Results revealed that females reported significantly higher test anxiety than males, and 9th graders reported significantly higher test anxiety than the 12th graders on TAI total and sub-scale (Worry and Emotionality) scores. When the predictive roles of each sub-dimension score of the SCS on the test anxiety scores were examined, over-identification and isolation significantly predicted all three TAI scores.



**Keywords:**
adolescents, mindfulness, self-compassion, test anxiety.

## Introduction

Most of the countries in the world have education systems that are developed and improved according to their own culture and needs. Even though these education systems vary from country to country, there are many common properties among the countries that follow modern education principles. For example, the holistic approach is one of the main principles of modern education and this principle aims to improve the student as a whole (not only cognitively but also emotionally, physically, socially, and morally) throughout their education life. However, it can be claimed the modern education, which adopts the holistic approach,

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DOI: https://doi.org/10.15345/iojes.2021.05.001

does not completely reflect this aim at their practice (Kılıççı, 2006). Students' *test anxiety* is one of the most significant signs of it. Although there have been both direct and indirect relationship between the expectations of students to be appriciated by their teachers, parents, and peers, which brings the test anxiety to the forefront. The prevalence of the research on test anxiety in many countries shows that this is a common problem for students of all ages all around the world (Bodas & Ollendick, 2005; Rana & Mahmood, 2010; Salehi & Marefat, 2014).

Test anxiety is defined as an uncomfortable condition that can be distinguished by discomfort, angst, worrying thoughts, and central nervous system mobility when encountering an evaluation that expects success (Spielberger, 1972). According to Beidel (1991), test anxiety refers to cognitive, physical, and behavioral reactions to the possibility of a failure or low-performance concerns in an exam or similar assessment situations.

Test anxiety has various components; *worry* and *emotionality* are commonly mentioned components in the literature (Liebert & Morris 1967). Worry refers to the cognitive dimension of anxiety and it is revealed as comparing her/himself with peers, excessive disturbance when encountering an exam, feeling insecure about performance, and feeling down when thinking about the possibility of failure (Sarason, 1984). On the other hand, emotionality commonly refers to physiological conditions such as dizziness, tachycardia, and nausea (Morris, Davis, & Hutchings, 1981; Wine, 1971).

According to Spielberger (1972), anxiety creates pressure on students and weakens the performance. Thus students cannot reflect their qualifications, which are directly proportional to preparation and ability, to test results. This causes damage to students' belief in themselves and their potential. During adolescence, this damage can be a serious problem not only in academic terms but also in emotional terms (Giedd, 2008). Adolescence is a period of growth and strain defined by rapid cognitive, physiological and neurological changes. During these rapid changes, adolescents are struggling with emotional and interpersonal challenges(Cicchetti &Toth, 1996; Cartwright-Hatton, 2006). Individuals need to develop appropriate solutions for the problems they encounter during the adolescence period to be able to cope with the difficulties they face and to continue their lives as healthy individuals.

With that being said, recently *self-compassion,* a new concept derived from Buddhist philosophy, has become one of the alternative methods that are suggested to develop healthy habits toward themselves (Neff, 2003a). Self-compassion is defined as the self-understanding and care of the individual in the face of painful experiences and failures; it includes being understanding and caring towards themselves instead of being judgemental, being aware of the fact that this painful experience is a part of being a human in a broader sense rather than isolating herself/himself from others and having more balanced awareness instead of over-identification with the painful emotions and thoughts (Neff, 2003a; Neff, 2003b).

Research shows that among adolescents self-compassion has a negative correlation with depression, anxiety, and stress; and a positive correlation with well-being and self-esteem (Bluth & Blanton, 2014a; Bluth & Blanton, 2014b; Neff & McGehee, 2010). According to these research results, anxiety level decreases as self-compassion level increases. However, these studies do not research "test anxiety". There is a paucity in the studies that investigated the relationship between test anxiety and self-compassion. Case in point, Neff et al., (2005) state that a high self-compassion level will lead to less fear and worry about failure, and he supports this idea with this view; with self- compassion, one will be understanding and polite to themselves and will not identify this failure with self-worth when encountering failure.

Another concept related to self-compassion in the theoretical sense *mindfulness* which is also derived from Buddhist philosophy. Mindfulness is a state of awareness that contains voluntarily leading the attention to the present moment and accepting experiences as they are, without judgment (Williams, Teasdale, Segal, &

Kabat-Zinn, 2007). Williams and Penman (2014) define mindfulness as when encountering negative experiences one does not surrender themselves to stress or unhappiness and at the same time does not ignore these feelings. They describe mindfulness as seeing negative experiences as dark clouds in the sky and learning comes from watching their floating with a friendly curiosity. They also assert that overtime this skill will create a long-term change in happiness and peace level in a person's mood. Therefore, it can be argued that mindfulness is a skill to improve insight that allows accepting emotions as it is rather than denying them. In the same vein, mindfulness can be described as the assistive process that renders adolescents to able to adopt rapid changes of emotion which are a natural part of emotional development in adolescence. Besides, emotional development in adolescence includes establishing a realistic and consistent sense of identity in terms of learning to establish a relationship with others, coping with stress and managing emotions (Santrock, 2012). From this point of view, the fact that the ability of adolescents to manage their emotions and to address and tackle them in a right manner will make the individual strong towards possible challenges in the future. Researches have shown that mindfulness is positively correlated with emotion-regulation and has a balancing and regulating effect on emotions (Farb et al., 2010; Teper, Segal, & Inzlicht, 2013).

Furthermore, there are studies that seek to find possible point of departures regarding the relationship between mindfulness and anxiety. They indicate that mindfulness, like self-compassion, is negatively correlated with anxiety, depression, and stress (Grossman, Niemann, Schmidt, & Walach, 2004; Hayes & Feldman, 2004), while others argue that well-being (Brown & Ryan, 2003; Cash & Wittingham, 2010) and self-esteem (Pepping, O'Donovana, & Davisa, 2013; Rasmussen & Pidgeon, 2011) are psychological variables that are positively correlated with mindfulness.

In addition to the similarity of the variables associated with them, researches show that mindfulness and self-compassion are positively correlated (Hollis-Walker & Colosimo, 2011; Moore, 2013; Özyeşil, 2011) and the increase in the level of mindfulness is a predictor of the increase in the level of self-compassion (Birnie, Speca, & Carlson, 2010). All these findings reveal the close relationship between mindfulness and self-compassion.

**The Present Study**

Examining the relationship of "test anxiety", a special type of anxiety, with self-compassion and mindfulness can contribute to the planning and execution of psychological intervention services for school, test anxiety prevention and reduction. For this reason, this study aimed to examine the relationship between test anxiety and these variables which are mindfulness and self-compassion. Additionally, the effects of gender and grade level variables on the test anxiety were examined in the study. There are many findings in the literature on the relationship between gender and test anxiety (Cassady & Johnson, 2002; Hembree, 1998; Pazarlı, 2009). In most of these findings, test anxiety differed by gender, however, some researches reported no difference related to gender (Gençdoğan, 2010; Sakızlıoğlu, 2003). For this reason, it is important to examine gender effect and thus gender variable is one of the variables in this study.

Contrary to the gender variable, there are a few studies on examining the grade level of high school students on their test anxiety. Researches on test anxiety among adolescents in Turkey were generally conducted either with 12$^{th}$ grade students, who are about to take the university entrance exam or with students who recently graduated from high school, who are also preparing for the university entrance exam (Güler & Çakır, 2013; Yağcı, 2010). Therefore, the present study aimed to examine gender and grade level effects on test anxiety. Additionally, the predictive roles of self-compassion and mindfulness on the test anxiety levels of high school students were investigated.

## Method

### Participants

The study was conducted at a public school in Bursa, Turkey in the 2018-2019 academic year. Convenience sampling method was used. Participants were 9th, 10th, 11th and 12th grade Academic High School students who voluntarily participated in the study. The total number of students in this school was 804. Data were collected from 678 students. However, since 32 students were excluded from the study due to missing data, data analyses were completed with 646 students. This number is 80.3% of the total school size. Table 1 shows the distribution of students by gender, grade level, and age.

**Table 1.** Distribution of Sample by Gender, Grade Level and Age (N=646)

| Variable | *n* | % |
|---|---|---|
| Gender | | |
| Female | 371 | 57.4 |
| Male | 275 | 42.6 |
| Grade | | |
| 9th | 219 | 33.9 |
| 10th | 137 | 21.2 |
| 11th | 146 | 22.6 |
| 12th | 144 | 22.3 |
| Age | | |
| 14 | 157 | 24.3 |
| 15 | 175 | 27.1 |
| 16 | 141 | 21.8 |
| 17 | 147 | 22.8 |
| 18 | 26 | 4.0 |

As seen in Table 1, the ratio of female students (57.4%) is higher than male students (42.6%), but the distribution of participants in the study group by gender is balanced. In terms of the number of students according to grade levels, the largest part of the study group was 9th grade (33.9%), followed by 10th grade (21.2%), 11th grade (22.6%) and 12th grade (22%). As seen that the 9th grade level's percentage is higher than the other grade levels. This is due to the fact that more 9th grade students were admitted to the school that year compared to previous years. Finally, in terms of the ages of the participants, the minimum number of students is in the 18-year-old category (4%) and the numbers of students in other categories were very close to each other.

### Measures

#### *Test Anxiety Inventory* (TAI)

TAI is a 4-point Likert-type inventory of 20 items to measure test anxiety. The respondents are asked to select one of the options ranging from "almost never" (1) to "almost always "(4) for each expression. TAI has two subdimensions; Worry and Emotionality. Higher scores from TAI means higher test anxiety, worry, and emotionality. The data collected from undergraduate and highschool students regarding TAI's validity and reliability showed that the concurrent and construct validity and test-retest reliability and internal consistency of the TAI (Spielberger, Gonzalez, Taylor, Algaze, & Anton 1980). Turkish adaptation and validity and reliability studies of TAI were conducted by Öner (1990). The test-retest correlation coefficients calculated for the Turkish version of the inventory were between .90 and .70, and the Cronbach's Alpha values were between .89 and .73. Item-total score correlations for the total scale were .46 and did not fall below .43 for the subscales

(Öner, 1990). For the TAI, the Cronbach Alpha coefficients recalculated in this study were; .91 for the overall scale, .81 for Worry and .87 for Emotionality (See Table 2).

***Self-Compassion Scale (SCS)***

SCS is a 5-point Likert-type 26 item scale to measure self-compassion. The respondents are asked to select one of the options ranging from "Never" (1) to "Always "(4) for each expression. SCS has six subdimensions; Self-Kindness, Self-Judgement, Common Humanity, Isolation, Mindfulness and Over Identification. Of these Self-judgement, Isolation and Over identification sub-scales are reverse coded and then the average of six subscales is calculated to find the total self-compassion score (SCS-T). A score of 1-2.5 indicates low, a score of 2.5 to 3.5 indicates medium, and a score of 3.5-5 indicates a high level of self-compassion (Akın 2012). The validity and reliability studies of SCS for Turkish highschool students were conducted by Toksoy (2018). As in the original, The Turkish version of SCS for adolescents also has six subdimensions. Cronbach Alpha values for these subdimensions range between .71 (Self-kindness, common humanity) and .74 (Mindfulness); and test-retest reliability values range between .56 and .69. The Cronbach Alpha coefficients recalculated in this study were; .90 for the SCS overall, .74 for Self-Kindness, .78 for Self-Judgment, .65 for Common Humanity, .74 for Isolation, .72 for Mindfulness, .71 for Over Identification (See Table 2).

***Mindfulness Attention Awareness Scale (MAAS)***

The MAAS developed by Brown and Ryan (2003) is 6-point Likert-type 15 item scale. The respondents are asked to select one of the options ranging from "almost always" (1) to "almost never "(4) for each expression. This is a one-dimension scale and gives only one total score. The higher scores from the scale indicate higher mindfulness. The adaptation of the MAAS to Turkish was conducted by Özyeşil, Arslan, Kesici, and Deniz (2011) and item factor loads for the Turkish MAAS were calculated between .48 and .81, and the item-total correlations were above .40 for all items in the scale. Additionally, the internal consistency coefficient for Turkish MAAS was reported as .80 and the test-retest correlation was .86. The adaptation of the MAAS for Turkish high school students was conducted by Uygur (2017). For high school students, the Cronbach Alpha internal consistency coefficient of MAAS was .82, and Spearman-Brown's two half reliability coefficient was .83. In the present study, the internal consistency of the MAAS wascalculated as .82 (See Table 2).

***Personal Information Form***

This form, developed by researchers, contains questions related to students' age, gender and grade level.

**Procedure**

Following the review and approval procedures of Bursa Provincial Directorate of National Education (86896125-605.01-E.3055078 number and 08.03.2017 dated letter of approval), research data were collected from the students based on a voluntary basis during their class hours and at classrooms at the fall semester of 2018-2019. The data collection was completed in approximately 35 minutes. To be able to measure students' test anxiety more appropriately, the measurement process was started 10 days before the final exams and completed within 7 days. The students were informed about the purpose of the research and that the answers were kept confidential.

**Data Analysis**

In addition to descriptive statistics, an Independent Sample t-test is used to determine the gender effect on the students' test anxiety and One-Way ANOVA is used to determine the grade level effect on the test anxiety levels. The skewness and kurtosis values of the data obtained from three measurement instruments

were examined to determine whether the normality assumptions required for these analyzes were met (See Table 2). According to Tabachnick and Fidell (2013), skewness and kurtosis values in the range of ⊚1.5 indicates that data are normally distributed. Based on this criterion, all scales are normally distributed (See Table 2). Additionally, the Levene test was used for homogeneity of variances and parametric tests were applied to analyze data. Scheffe test was used to make binary comparisons to find out the source of the difference in One-Way ANOVA results. Pearson Moments Correlation coefficients were calculated to examine the relationship of test anxiety (Total and Sub-scale scores), with self-compassion (Total and Sub-scale scores), and mindfulness.

Moreover, Multiple Linear Regression (MLR) Analyses were used to determine whether grade levels, gender, SCS (SCS-T and sub-scale) scores, and MAAS scores meaningfully predicted TAI scores (TAI-T, Worry and Emotionality). The criterion (N>50+8m) proposed by Tabachnick (2013) is taken into consideration to be able to check whether the sample size assumption required for MLR analysis is met. Since there were 9 independent variables and 646 participants (646> 50 + 8x9= 122) in this study, the sample size adequacy for regression was met. Histogram and P-P plot were used to check the normality assumption. The histogram was distributed normally and P-P plots followed a lined with approximately 45 degrees. The scatter plot was examined to check the assumption of equilibrium, and since there was no apparent pattern in the plot, this assumption was also met. The Durbin-Watson coefficient value was checked to control the assumption of Independence of errors and the criterion that this coefficient value was between 1-3 (Durbin & Watson, 1951). Since the Durbin-Watson coefficient value was 1.93, this criterion was met. To check the assumption of the Multicollinearity hypothesis, VIF (variance influence factor), correlation and tolerance value between predictive variables, were examined and the VIF values were found to vary between 1.45 and 2.47. These values met the criteria, defined by Pan and Jackson (2008), not to be less than 4. Based on meeting the criteria of the correlation between the predictor variables that cannot be greater than .90 (Field, 2009), the highest correlation value was .70 among all predictor variables in the study. Besides, meeting the criteria of tolerance value greater than .20 (Menard, 1995), the tolerance values ranged from .40 to .69. Finally to be able to determine outliers of assumptions of the MLR analysis, Mahalanobis distance test was applied. In this calculation, the Mahalanobis value was calculated for each subject and compared to the critical chi-square value (Tabachnick & Fidell, 2013). Accordingly, Mahalanobis distance was calculated and examined whether this value was greater than the critical chi-square value ($x^2$= 16.27) for ∝=.001 and 3 degrees of freedom. Since the maximum Mahalanobis distance was 15.21 in this study, analyzes were continued without extracting any data. The gender variable coded as a dummy variable (Female:1, Male:0) to be able to add it to the regression analysis.

All analyses were performed with the "SPSS for Windows 22.00" package program. The level of significance was taken as p< .01 and p< .05 in all analyses.

## Results

### Descriptive Statistics of the Study Variables

The minimum-maximum, mean, standard deviation, skewness, and kurtosis values of the TAI, SCS and MAAS scores of 646 students who participated in the study and Cronbach's Alpha values calculated for the scales are given in Table 2.

**Tablo 2.** Descriptive Statistics of Study Variables and Cronbach's Alpha Values of Scales (n=646)

| Scale | *Min.* | *Max* | *M* (SD) | *Skewness* | *Kurtosis* | *α* |
|---|---|---|---|---|---|---|
| TAI | | | | | | |
| TAI-T | 1 | 4 | 2.28 (.60) | .247 | -.433 | .91 |
| Worry | 1 | 4 | 2.18 (.65) | .499 | -.251 | .81 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Emotionality | 1 | 4 | 2.34 (.62) | .150 | -.527 | .87 |
| MAAS | 1 | 6 | 3.87 (.83) | -.109 | -.290 | .82 |
| SCS | | | | | | |
| SCS-T | 1 | 5 | 2.97 (.71) | -.019 | -.354 | .90 |
| Self-kindness | 1 | 5 | 2.72 (.90) | .377 | -.378 | .74 |
| Self-judgement | 1 | 5 | 3.43 (.99) | .458 | -.496 | .78 |
| Common humanity | 1 | 5 | 2.68 (.86) | .390 | -.223 | .65 |
| Isolation | 1 | 5 | 2.98 (1.04) | .098 | -.827 | .74 |
| Mindfulness | 1 | 5 | 2.86 (.90) | .202 | -.589 | .72 |
| Over-identification | 1 | 5 | 3.07 (1.00) | .064 | -.731 | .71 |

*Note*. TAI= Test Anxiety Inventory; TAI-T= TAI total score; MAAS= Mindfulness Attention Awareness Scale; SCS= Self-Compassion Scale; SCS-T= SCS total score; Min.= Minimum possible score; Max.= Maximum possible score; *M*= mean; *SD*= Standard deviation; $\alpha$=Cronbach's Alpha coefficient.

When Table 2 is examined, it can be seen that for TAI the highest mean is for Emotionality scores ($\bar{x}$=2.34), and the lowest mean is for Worry scores ($\bar{x}$=2.18); for SCS the highest mean is for Self-Judgement scores ($\bar{x}$=3.43), and the lowest mean is for Common Humanity scores ($\bar{x}$=2.68). Besides, TAI-T ($\bar{x}$=2.28) and two sub-scale score means, Worry ($\bar{x}$=2.18) and Emotionality ($\bar{x}$= 2.34), showed above-average test anxiety. The skewness and kurtosis values for all scales are within the expected limits and indicate the normal distribution of data (Tabachnick & Fidell, 2013). All calculated Cronbach's Alpha values for three scales and sub-scales were higher than .70, thus this shows evidene for the reliability of the scales (Cortina, 1993).

**Findings on Examining of Test Anxiety Scores by Gender and Grade Levels**

Independent Samples t-test results which were applied to determine whether students' test anxiety scores are significantly differentiated by gender are presented in Table 3.

**Table 3.** Independent Samples T-Test Results on Whether Test Anxiety Results Differentiated by Gender

| Scale/Sub-scale | Gender | *n* | *M* (SD) | *t* | *p* |
|---|---|---|---|---|---|
| TAI-T | | | | | |
| | Female | 371 | 2.398 (.574) | 6.265 | .000* |
| | Male | 275 | 2.109 (.591) | | |
| Worry | | | | | |
| | Female | 371 | 2.267 (.642) | 3.936 | .000* |
| | Male | 275 | 2.067 (.635) | | |
| Emotionality | | | | | |
| | Female | 371 | 2.486 (.590) | 7.318 | .000* |
| | Male | 275 | 2.137 (.613) | | |

Note. TAI-T= Test Anxiety Inventory total score, *p< .01

As shown in Table 3, both TAI-T score ($t_{644}$=6.265, p< .01) , Worry ($t_{644}$=3.936, p< .01) and Emotionality ($t_{644}$=7.318, p< .01) sub-scale scores are significantly differentiated by gender. Female students reported more test anxiety, worry, and emotionality than male students.

The ANOVA results, which were applied to determine whether students' test anxiety scores are significantly differentiated by grade level are presented in Table 4.

**Table 4.** ANOVA Results for Grade Level Effects on the TAI-T and Sub-Scale Scores

| Scale/sub-scale | Grade | *n* | *M* (SD) | F | *p* | P |
|---|---|---|---|---|---|---|
| TAI | | | | | | |
| | 9th | 219 | 2.38 (.59) | | | |
| | 10th | 137 | 2.27 (.61) | 5.677 | .001* | 1-4 |
| | 11th | 146 | 2.29 (.62) | | | |
| | 12th | 144 | 2.12 (.55) | | | |
| Worry | | | | | | |
| | 9th | 219 | 2.97 (.64) | | | |
| | 10th | 137 | 2.19 (.66) | 5.744 | .001* | 1-4 |
| | 11th | 146 | 2.19 (.68) | | | |
| | 12th | 144 | 2.01 (.57) | | | |
| Emotionality | | | | | | |
| | 9th | 219 | 2.44 (.61) | | | |
| | 10th | 137 | 2.32 (.63) | | | |
| | 11th | 146 | 2.35 (.64) | 4.641 | .003* | 1-4 |
| | 12th | 144 | 2.19 (.59) | | | |

1= 9th grade, 2= 10th grade, 3= 11th grade, 4= 12th grade, *p< .05

As shown in Table 4, both TAI-T score (F= 5.677; p< .05), and Worry (F= 5.744; p< .05) and Emotionality (F= 4.641; p< .05) sub-scale scores are significantly differentiated by grade levels. Scheffe test results show that, the group differences for these three score types are only between 9th grade and 12th grade. Accordingly, 9th grade students reported more test anxiety than 12th grade students.

**Findings on the Relationship Between Test Anxiety, Self-Compassion and Mindfulness Levels**

The results of the Pearson Moments correlation analysis, which were applied to examine the relationship of students' TAI-T and sub-scale scores with MAAS, SCS-T and SCS sub-scale scores are presented in Table 5.

**Table 5.** Pearson Correlations Among Variables

| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. TAI-T | 1 | | | | | | | | | | |
| 2. Worry | .92** | 1 | | | | | | | | | |
| 3. Emotionality | .96** | .78** | 1 | | | | | | | | |
| 4. MAAS | -.41** | -.40** | -.39** | 1 | | | | | | | |
| 5. SCS-T | -.42** | -.36** | -.42** | .45** | 1 | | | | | | |
| 6. Self-kindness | -.24** | -.18** | -.26** | .26** | .81** | 1 | | | | | |
| 7. Self-judgement | .38** | .34** | .38** | -.52** | -.81** | -.56** | 1 | | | | |
| 8. Common humanity | -.08 | -.05 | -.09* | .10* | .59** | .53** | -.27** | 1 | | | |
| 9. Isolation | .45** | .41** | .44** | -.43** | -.74** | -.40** | .62** | -.22** | 1 | | |
| 10. Mindfulness | -.20** | -.16** | -.21** | .19** | .74** | .70** | -.45** | .53** | -.32** | 1 | |
| 11. Over identification | .47** | .43** | .45** | -.44** | -.75** | -.40** | .60** | -.23** | .67** | -.40** | 1 |

*Note*. TAI= Test Anxiety Inventory; TAI-T= TAI total score; MAAS= Mindfulness Attention Awareness Scale; SCS= Self-Compassion Scale; SCS-T= SCS total score; Min.= Minimum possible score.**p< .01, *p< .05

As shown in Table 5, the relationship between the total scores from all three scales reports that there is a significant and negative relationship of TAI-T with SCS-T (r= -.42, p< .01) and MAAS (r= -.41, p< .01) scores. In other words, as students' self-compassion and mindfulness levels decrease their test anxiety levels increase.

When the relationship between TAI-T scores and SCS sub-scales are examined, a moderate relationship between TAI-T scores and Over-identification score (r= .47, p< .01) and Isolation (r= .45, p< .01) were found, as well as a low and negative relationship between TAI-T scores and Self-judgement (r= .38, p< .01). On the other hand, the relationship between TAI-T scores and self-kindness (r= -.24, p< .01) and mindfulness (r= -.20, p< .01) were low and negative; and there was no significant relationship between TAI-T scores and common humanity (r= -.08, p> .05). Accordingly, when students' over-identification, isolation, and self-judgment levels increase their test anxiety increases, contrary to when students' self-kindness and mindfulness levels increase their test anxiety decreases.

When Table 5 examined in terms of the relationship between TAI's sub-scales and other variables, a moderate and negative relationship between Worry scores and MASS scores (r= -.40, p< .01), and a low but significant relationship between Worry scores and SCS-T scores (r= -.36, p< .01) are seen. When the relationship between Worry scores and SCS sub-dimensions are examined; a moderate relationship with over-identification scores (r= .43, p< .01) and isolation scores (r= .41, p< .01), and a low and positive relationship with self-judgement scores (r= .34, p< .01) were found. On the other hand, Worry scores have a low level and significant relationship with self-kindness scores (r= -.18, p< .01) and mindfulness scores (r= -.16, p< .01) but do not have a significant relationship with common humanity scores (r= -.05, p> .05). Findings show that when students' mindfulness, self-kindness, and self-compassion levels increase, their worry levels decrease. However when students' over-identification, isolation, and self-judgment levels increase their worry levels increase.

When Table 5 is examined in terms of the relationships among Emotionality scores and other scale and sub-scale scores, there is a moderate level relationship with SCS-T scores (r= -.42, p< .01), and a low level of significant and a negative relationship with MAAS scores (r= -.39, p< .01). In addition, the relationships between Emotionality scores and SCS over-identification scores (r= .45, p< .01) and Emotionality scores and Isolation scores (r= .44, p< .01) were found to be moderate; and the relationships between Emotionality scores and Self-judgement scores (r= .38, p< .01) was found to be low level and a positive relationship. On the other hand, the relationships among Emotionality scores and Self-kindness (r= -.26, p< .01), Mindfulness (r= -.21, p< .01) and Common humanity (r= -.09, p< .05) scores were found to be low level of significant and negative relationships. Thus, as students' mindfulness, self-kindness, common humanity, and self-compassion levels increase, their emotionality levels decrease. In addition, as their levels of over-identification, isolation and self-judgment increase, their level of emotionality increases.

When Table 5 is examined in terms of the relationships of the findings of MAAS and SCS scores, while there is a moderate and positive relationship between MAAS and SCS-T (r= .45, p< .01) scores, there are moderate and negative relationships between MAAS scores and SCS sub-scale scores; Self-judgement (r= -.52, p< .01), Over-identification (r= -.44, p< .01) and Isolation (r= -.43, p< .01). On the other hand, there is a low level of significant and positive relationship between MAAS scores and Self-kindness (r= .26, p< .01), Mindfulness (r= .19, p< .01) and Common humanity (r= .10, p< .05) scores. Thus, students' self-compassion and mindfulness levels are significantly and positively related. Additionally, as students' Self-judgement, Over-identification and Isolation levels increase, their mindfulness levels decrease; and as students' self-kindness, mindfulness, and common humanity levels increase, their mindfulness levels increase.

**Findings on Predictive Roles of Class Level, Gender, Self-Compassion and Mindfulness on Test Anxiety**

The findings of three separate MLR analyzes to determine whether grade level and gender variables and SCS-T and MAAS scores are significant predictors of TAI-T and sub-scale scores were given in Table 6.

**Table 6.** The Results of the MLR Analyses of Grade Level, Gender, and SCS-T and MAAS Total Scores Predicting TAI-T and Sub-Scale Scores

| Variable | B | Standard Error | β | *t* | *p* | Part | Partial |
|---|---|---|---|---|---|---|---|
| TAI-T | | | | | | | |
| Constant | 3.76 | .12 | - | 30.89 | .000* | - | - |
| Grade | -.07 | .02 | -.14 | -4.10 | .000* | -.14 | -.16 |
| Gender | .18 | .04 | .15 | 4.37 | .000* | .15 | .17 |
| SCS-T | -.23 | .03 | -.28 | -7.30 | .000* | -.25 | -.28 |
| MAAS | -.19 | .03 | -.26 | -6.93 | .000* | -.23 | -.26 |
| Worry | | | | | | | |
| Constant | 3.77 | .14 | - | 27.63 | .000* | - | - |
| Grade | -.08 | .02 | -.14 | -4.07 | .000* | -.14 | -.16 |
| Gender | .09 | .05 | .07 | 1.96 | .051 | .07 | .08 |
| SCS-T | -.21 | .04 | -.23 | -5.82 | .000* | -.20 | -22 |
| MAAS | -.22 | .03 | -.28 | -7.09 | .000* | -.25 | -.27 |
| Emotionality | | | | | | | |
| Constant | 3.76 | .13 | - | 29.48 | .000* | - | - |
| Grade | -.07 | .02 | -.12 | -3.63 | .000* | -.12 | -14 |
| Gender | .24 | .04 | .19 | 5.57 | .000* | .19 | .21 |
| SCS-T | -.25 | .03 | -.29 | -7.48 | .000* | -.25 | -.28 |
| MAAS | -.17 | .03 | -.23 | -5.98 | .000* | -.20 | -.23 |

*Note.* TAI-T= TAI total score; MAAS= Mindfulness Attention Awareness Scale; SCS-T= Self-Compassion Scale total score; $\beta$ = standardized regression coeeficient, *p< .01

As seen in Table 6, the MLR model was found significant for the TAI-T scores ($R$ = .53; $p$ < .01). In other words, grade level ($t$ = -4.10; $p$ < .01), gender ($t$ = 4.37; $p$ < .01), SCS-T ($t$ = -7.30; $p$ < .01) and MAAS ($t$ = -6.93; $p$ < .01) scores together significantly predicted the TAI-T scores ($F_{4,641}$= 62.24; $p$ < .01). Together these four variables account for 27.5% of the variance in the TAI-T scores ($R^2$ = .28; $R^2_{adjusted}$ = .275). Based on the standardized regression coeeficient ($\beta$) , the order of relative significance of the predictors on the test anxiety was; self-compassion (-.28), mindfulness (-.26), gender (.15) and grade level (-.14).

According to Table 6, the MLR model is also significant for Worry scores ($R$ = .47; $p$ < .01). Together grade level ($t$ = -4.07; $p$ < .01), SCS-T ($t$ = -5.82; $p$ < .01) and MAAS ($t$ = -7.09; $p$ < .01) scores significantly predict Worry scores ($F_{4,641}$= 46.52; $p$ < .01). However gender ($t$ = 1.37; $p$ >.01) did not predict Worry scores significantly. Together these three variables account for 22% of the variance in the Worry scores ($R^2$ = .23; $R^2_{adjusted}$ = .22). Based on ($\beta$) values, the relative order of importance of predictors on test anxiety is; mindfulness (-.28), self-compassion (-.23) and grade level (-.14).

When Table 6 is examined,the MLR model is also significant for Emotionality ($R$ = .53; $p$ < .01). Together grade level ($t$ = -3.63; $p$ < .01), gender ($t$ = 5.57; $p$ < .01), SCS-T ($t$ = -7.48; $p$ < .01) and MAAS ($t$ = -5.98; $p$ < .01) scores significantly predict Emotionality scores ($F_{4,641}$= 60.87; $p$ < .01). Together these four variables account for

27% of the variance in Emotionality scores ($R^2$ = .28; $R^2_{adjusted}$ = .27). Based on ($\beta$) values, the relative order of importance of predictors on test anxiety is; self-compassion (-.29), mindfulness (-.23), gender (.19) and grade level (-.12).

The findings of three separate MLR analyzes to determine whether SCS sub-scale scores are significant predictors of TAI-T (total and sub-scale) scores were given in Table 7.

**Table 7.** The Results of the MLR Analyses of SCS Sub-Scale Scores Predicting TAI-T and TAI Sub-Scale Scores

| Variable | B | Standard Error | β | *t* | *p* | Part | Partial |
|---|---|---|---|---|---|---|---|
| TAI-T | | | | | | | |
| Constant | 1.22 | .14 | - | 8.36 | .000* | - | - |
| Self-kindness | -.03 | .04 | -.04 | -.80 | .423 | -.03 | -.03 |
| Self-judgement | .05 | .03 | .08 | 1.62 | .106 | .06 | .06 |
| Common humanity | .06 | .03 | .08 | 1.89 | .059 | .06 | .08 |
| Isolation | .13 | .03 | .22 | 4.36 | .000* | .15 | .17 |
| Mindfulness | .01 | .03 | .01 | .09 | .925 | .01 | .01 |
| Over-identification | .16 | .03 | .28 | 5.60 | .000* | .19 | .22 |
| Worry | | | | | | | |
| Constant | .99 | .16 | - | 6.18 | .000* | - | - |
| Self-kindness | .01 | .04 | .01 | .26 | .797 | .01 | .01 |
| Self-judgement | .06 | .03 | .07 | 1.65 | .100 | .06 | .07 |
| Common humanity | .05 | .03 | .07 | 1.62 | .106 | .06 | .06 |
| Isolation | .12 | .03 | .19 | 3.75 | .000* | .13 | .15 |
| Mindfulness | .00 | .04 | .01 | .01 | .990 | .00 | .00 |
| Over-identification | .18 | .03 | .27 | 5.37 | .000* | .19 | .21 |
| Emotionality | | | | | | | |
| Constant | 1.35 | .15 | - | 8.89 | .000* | - | - |
| Self-kindness | -.05 | .04 | -.08 | -1.45 | .147 | -.05 | -.06 |
| Self-judgement | .05 | .03 | .07 | 1.40 | .162 | .05 | .06 |
| Common humanity | .06 | .03 | .08 | 1.85 | .065 | .06 | .07 |
| Isolation | .13 | .03 | .21 | 4.26 | .000* | .15 | .17 |
| Mindfulness | .01 | .04 | .01 | .14 | .889 | .01 | .01 |
| Over-identification | .16 | .03 | .25 | 5.08 | .000* | .17 | .20 |

*Note*. TAI-T= Test Anxiety Scale total score, $\beta$ = standardized regression coeeficient. *p< .01

According to Table 6, the MLR model is significant for TAI-T scores ($R$ = .51; $p$ < .01). In other words, self-kindness, self-judgement, common humanity, isolation, mindfulness and over-identification significantly predict TAI-T scores ($F_{6,639}$= 37.62; $p$ < .01). Together these six variables account for 25% of the variance in TAI-T scores ($R^2$ = .26; $R^2_{adjusted}$ = .25). While isolation ($t$ = 4. 36; $p$ < .01) and over identification scores ($t$ = 5. 60; $p$ <

.01) predict total TAI scores significantly and positevely; self-kindness ($t$ = -.80; $p$ > .05), self-judgement ($t$ = 1.62; $p$ > .05), common humanity ($t$ = 1.89; $p$ > .05) and mindfulness ($t$ = .09; $p$ > .05) scores were not statistically significant. modele katkısı istatistiksel olarak anlamlı düzeyde bulunmamıştır. According to ($\beta$) values, the relative order of importance of predictors on test anxiety total scores is; over-identification (.28) and isolation (-.22).

Table 7 presents that the MLR model is also significant for Worry scores ($R$ = .51; $p$ < .01). In other words, together self-kindness, self-judgement, common humanity, isolation, mindfulness and over identification scores significantly predicts Worry scores ( $F_{6,639}$= 29.67; $p$ < .01). Together these six variables account for 21% of the variance in Worry scores ( $R^2$ = .22; $R^2_{adjusted}$ = .21). While isolation ($t$ = 3. 75; $p$ < .01) and over-identification ($t$ = 5. 37; $p$ < .01) scores predict Worry scores significanlt and positively; self-kindness ($t$ = .26; $p$ > .05), self-judgement ($t$ = 1.65; $p$ > .05), common humanity ($t$ = 1.62; $p$ > .05) and mindfulness ($t$ = -.01; $p$ > .05) scores were not statistaclly significant. According to ($\beta$) values, the relative order of importance of predictors on Worry scores is; over-identification (.27) and isolation (.19).

As seen in Table 7, the MLR model is also significant for Emotionality scores ($r$ = .50; $p$ < .01). Thus, together self-kindness, self-judgement, common humanity, isolation, mindfulness, and over-identification scores significantly predict Emotionality scores ($F_{6,639}$= 34.88; $p$ < .01). Together these six variables account for 24% of the variance in Emotionality scores ($R^2$ = .22; $R^2_{adjusted}$ = .21). While isolation ($t$ = 4. 26; $p$ < .01) and over-identification ($t$ = 5. 08; $p$ < .01) scores predicts Emotionality scores significantly and positively, self-kindness ($t$ = -1.45; $p$ > .05), self-judgement ($t$ = 1.40; $p$ > .05), common humanity ($t$ = 1.85; $p$ > .05) a mindfulness ($t$ = .14; $p$ > .05) scores were not statistaclly significant. According to ($\beta$) values, the relative order of importance of predictors on Emotionality scores is; over-identification (.25) and isolation (.21).

## Discussion

In this study, female students reported a higher level of test anxiety (TAI-T, Worry, and Emotionality) than male students and 9$^{th}$ grade students reported a higher level of test anxiety (TAI-T, Worry, and Emotionality) than 12$^{th}$ grade students. In addition, high school students' self-compassion and mindfulness levels were significantly and negatively related to test anxiety (TAI-T, Worry and Emotionality); as students' self-compassion and mindfulness levels increased, their test anxiety levels decreased. Based on the findings of this study, together self-compassion, mindfulness, gender, and grade level were significant predictors of TAI-T score and Emotionality scores. While mindfulness, self-compassion, and grade level were significant predictors of Worry scores, gender was not a significant predictor. When the predictive roles of each sub-dimension score of self-compassion on the test anxiety scores (TAI-T, Worry, and Emotionality) were examined, it was found that over-identification and isolation significantly predicted all three test anxiety score types.

When the findings of this study are examined in terms of the relationship between gender and test anxiety, there are significant differences to the disadvantage of the female students. Both of the findings regarding the female students reported higher levels of test anxiety than male students and the findings regarding the predictive role of gender on test anxiety scores are in line with the results of many studies in the literature (Cassady & Johnson, 2002; Genç et al., 1999; Hembree, 1998). The reason for male students reported lower test anxiety than female students can be explained by male students to have the social teachings to express their feelings less and thus they avoid reporting anxiety and stress. The social teachings of boys are expected to be tough and stiff are taught at early ages in Turkey (Kuzgun 2009) could lead to this result.

Similar to Bacanlı and Sürücü's (2006) study results, this study found while gender had a predictive role on the total test anxiety score and Emotionality score, which is defined by physiological responses such as sweating of hands, tremor, dry mouth during the test/evaluation situations, gender does not have a predictive

effect on Worry scores. When these findings are examined, it can be seen that factors other than gender plays role in explaining the differences in Worry levels, which includes people's doubts about themselves on they cannot pass the exam and they are inadequate. Future research can explore what these factors may be.

In this study, the examinations in terms of grade level show that, as grade levels increase test anxiety, worry, and emotionality levels decrease. Additionally, 9th grade students experienced significantly more test anxiety than 12th grade students. These findings can be explained by the transition and the adaptation process of 9th grade students during their first months in high school. The data of this study were collected in the 9th grade students' first term of high school and right before the exam week. In this case, it can be expected that 9th grade students, who face a new environment and a complex classroom passing system, will have developed more anxiety reactions to upcoming examinations than students at other grade levels. Moreover, the fact that the course load is more in high school than in middle school is compelling and worrying for the 9th grade students. Since students face more courses and more complex curriculum, it is likely for the student to be concerned about the success. In addition to these, the 12th grade students might have reported less test anxiety compared to the 9th grades due to the positive effects of the psychological counseling and guidance services they received during their four years in high school. It is striking that the research on test anxiety of high school students in Turkey was mostly conducted with 12th grade students rather than all grade levels in high school. Similar to this study, Pazarlı's (2009) study covering all grade levels also showed that exam anxiety, contrary to what was thought, was not a state of emotion experienced by high school senior students more intensely. Although more research is needed to reach a final judgment on the relationship between high school students' grade levels and test anxiety, findings of this study showed that test anxiety is not a problem only experienced by 12th grade high school students who are preparing for university exams. Additionally, the findings of the study clearly showed the importance of planning and conducting studies on 9th grade students' test anxiety.

When the findings of the study related to the relationships of test anxiety with self-compassion and mindfulness were examined, significant and negative relationships were found between test anxiety (total, worry and emotionality) scores and self-compassion total and mindfulness total scores. Moreover, both self-compassion and mindfulness were found to be significant predictors for all three test anxiety scores. Accordingly, as students' self-compassion and mindfulness levels increase, their test anxiety, worry, and emotionality levels decrease. Even though there is not a study directly examining the relationship between self-compassion and mindfulness with test anxiety in the literature, it has been reported in many research that these two variables are negatively related to anxiety (Grossman et.al. 2004; Özyeşil 2011). It has been shown with this study that test anxiety, which is a special type of anxiety, also has a negative correlation with these two variables.

When the findings of the study regarding the relationship between the components of self-compassion and test anxiety (total and sub-scales) were examined, it was found that the high levels of over-identification, isolation, and self-judgment of the students were related with high total test anxiety, worry and emotionality; the high levels of self-kindness and mindfulness of the students were associated with low total test anxiety and worry. While common humanity, another sub-dimension of the self-compassion, was not associated with total test anxiety and worry; it was negatively related to emotionality. The dimensions of the self-compassion need to be examined to interpret better and discuss these results. Neff (2003a; 2003b) states self-compassion has three components such as; self-kindness versus self-judgment, common humanity versus isolation and mindfulness versus over-identification. Among these components, self-kindness, common humanity and mindfulness are three essential features that should be found in individuals with high self-compassion. The remaining three properties are inversely proportional to self-compassion. Thus, as a result of this study the relationship between self-compassion components with test anxiety, worry and emotionality were found in

two different directions: As the self- kindness and mindfulness levels, which were positively correlated with self-compassion, increase total test anxiety, worry, and emotionality levels decreased, and also as the common humanity level increased the emotionality level decreased. Another result is as self-judgment, isolation, and over-identification levels, which are negatively correlated with self-compassion, increase total test anxiety, worry, and emotionality levels increase.

Self-kindness and mindfulness mean that when the individual encounters with unpleasant experiences, s/he is sensitive and kind to her/himself and accepts this situation consciously. From this perspective, individuals who have these characteristics are expected to have a higher ability to cope with difficult situations such as test anxiety and the feelings and thoughts that accompany these situations. Similarly, in this study, high school students who have these characteristics reported less test anxiety. Contrary, high self-judgment, isolation and over-identification levels in adolescents indicate high total test anxiety, worry, and emotionality levels. The presence of positive relationships between adolescents' test anxiety and the negative components of self-compassion refers that an increase in test anxiety levels may be observed, if adolescents exhibit a critical, brutal and judgmental attitude towards themselves, or if they isolate themselves from others and identify themselves within failure. It would not be wrong to explain the reason for the absence of a significant relationship between common humanity subscale with total test anxiety and worry may be explained with self-centeredness in adolescence. Common humanity requires a mature attitude towards the situation. Since the self-centeredness is common in adolescence, adolescents' adopting a mature attitude towards their emotions can be considered as an early behavior for this developmental period. Nevertheless, since this was the first research on this subject, more research needed to determine whether the result arose from the sample group or a cultural difference.

In this study, when the findings related to the predictive power of the self-compassion and mindfulness on total test anxiety were examined, it was found that the most powerful predictor of total test anxiety and emotionality score was self-compassion, and followed by mindfulness, and the relationships between them were negative. On the other hand, it was found that the most powerful predictor of worry score was mindfulness, and followed by self-compassion, and the relationships between them were negative. Based on these findings, as high school students' self-compassion and mindfulness levels increased, their total test anxiety, worry, and emotionality scores decreased.

Worry is the cognitive dimension of test anxiety and it refers to the inner speeches on the individual who will be unsuccessful at the test and does not have sufficient skills to be successful (Liebert & Morris, 1967). The relationship between worry and anxiety with self-compassion and mindfulness has been shown in some research in the past. For example, Neff (2003b) found that self-compassion is negatively correlated with self-judgment, anxiety, and rumination. On the other hand, Jain et al. (2007) demonstrated that individuals' worry, rumination, and anxiety levels decrease by using mindfulness skills. Based on these studies, it can be interpreted as self-compassion and mindfulness increase, anxiety and worry, which includes ruminative thinking, decrease.

Since there is no research found on the relationship between Emotionality, which expresses the physiological dimension of anxiety, and self-compassion and mindfulness in the literature, it was not possible to directly compare this study's findings with previous findings. However, findings of the Bluth et al.'s (2016) study with adolescents showed that adolescents with high self-compassion levels had less physiological stress responses and anxiety levels than adolescents with low self-compassion levels. Considering that the physiological stress symptoms are similar to the anxiety symptoms, it is not surprising that the findings of Bluth et al.'s (2016) study are parallel to the findings of this study.

Findings show that only isolation, one of the sub-dimensions of self- compassion, and total test anxiety, one of the sub-dimensions of over-identification, can significantly and positively predict the worry and

emotionality scores, while all the other sub-dimensions were not statistically significant. Over-identification defines being devastated in emotional experiences and surrendering to these exaggerated emotions (Neff 2011). Anxiety can be defined as an emotional state that increases pessimism in both physiological and cognitive dimensions. Adolescence is a sensitive period since identity development begins to occur, and the adolescent's perception of this kind of pessimism as a part of his/her personality than temporarily and identifying himself as a failure will affect his character development negatively. The results of this study showed that as students' over-identification increase, their test anxiety increase. In this respect, test anxiety which underpins the failure feeling should not be perceived as only an academic problem.

Isolation, another predictor of test anxiety, is identified with the opposite of common humanity, one of the main components of self-compassion. Isolation refers to a series of behaviors involving the individual's alienation from his or her environment when encountering pain, sadness or failure. In contrast, common humanity involves accepting that whatever the problem is, it is the result of being human. Considering that the desire for social acceptance in adolescence has an important place for social development, the fact that factors such as adolescent's intelligence, academic success, skills, and emotional maturity also affect the degree of acceptance (Kulaksızoğlu 2002) may increase the meaning of the test and cause anxiety. When this state of anxiety leads to failure, the adolescent may see himself as an inadequate, useless and defective person; and can choose to cope with this situation by isolating himself.

Finally, in this study, mindfulness and self-compassion were positively correlated. According to the findings of the relationship between the components of self-compassion and mindfulness, high levels of self-judgment, over-identification, and isolation indicate a low level of mindfulness; high levels of self-kindness, common humanity and mindfulness indicate a high level of mindfulness. Similarly, previous research reported significantly positive relationships between self-compassion and mindfulness (Hollis-Walker and Colosimo 2011; Moore 2013; Özyeşil 2011). Thus, the findings of this study support the findings of previous studies.

**Limitations**

Firstly, since this study's sample is high school students of a single public school in Turkey, it limits the generalizability of the study findings. For this reason, if the future research on the relationship between self-compassion and mindfulness with test anxiety is conducted with different types of high school students and in different regions of Turkey, it will increase the generalizability of the findings. Moreover, in this study, it was found with a relational research design that self-compassion and mindfulness were negatively correlated to test anxiety and as the students' self-compassion and mindfulness levels increased, their test anxiety levels decreased. Based on these findings, it is thought that if structured test anxiety reduction programs containing self-compassion and mindfulness programs are created, and their effectiveness is tested by the researchers, it might be possible to examine the relationships between these variables through experimental studies.

**Conclusion**

In this study, the findings showed that it would be beneficial if school counselors in Turkish high schools add activities to improve self-compassion and mindfulness skills to the services they already provided for test anxiety prevention or reduction. In addition, the results seems important due to highlighting that female students are disadvantaged than male students, and 9$^{th}$ grade students are disadvantaged than 12$^{th}$ grade students in terms of test anxiety. With this study, it is underlined the need for further studies on the test anxiety for these disadvantaged groups.

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International Online Journal of Educational Sciences

ISSN: 1309-2707

# Development and Validation of the School Administrators' Work Motivation Scale (SAWMS)

*Research Article*

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**To cite this article:** Ata, E. (2021). Development and validation of the school administrators' work motivation scale (SAWMS), *International Online Journal of Educational Sciences, 13*(5), 1310-1324.

ARTICLE INFO

*Article History*:

Received: 20.08.2020

Available online: 20.10.2021

ABSTRACT

The main premise of this study is to develop and validate the work motivation scale for school administrators. Although researchers have put their efforts on measuring the concept 'motivation' in educational organizations, a review of literature reveals no instrument that measures the motivational sources of school administrators which affect their commitments and efforts in Turkish Culture. This study is a descriptive one aimed to examine the work motivation levels of school administrators. In this sense, a total of 268 school administrators were recruited in this study. The reliability and validity analyses were conducted after the Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) of the data during the pilot study. EFA revealed that items were collected under three factors, and the total variance of the factors was calculated as 59.07%. Before the EFA which was conducted for each factor, the number of the items were 32, but it resulted in 15 items. The findings indicate that the item load values of the School Adminisrators' Work Motivation Scale (SAWMS) are mostly at high level. The reliability coefficient of the scale was .87. In this sense, this scale can be considered as a reliable and valid instrument to evaluate the work motivations on school administrators.



**Keywords:**
Work motivation scale, scale development, school administrators, external or internal motivation, commitment.

## Introduction

The latest theories of motivation posit that individuals take action and persist at their attitudes and behaviors to the extent that they think that their actions will ultimately lead to targeted and desired outcomes (Deci & Ryan, 2000). Previous literature has provided compelling evidence that motivation is of great importance for the school effectiveness that encompasses successful school leadership (Day & Leithwood, 2007; Gurr, Drysdale, & Mulford, 2006; Leithwood, Harris, & Hopkins, 2008), effective instruction (Hallinger

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DOI: https://doi.org/10.15345/iojes.2021.05.002

& Murphy, 1987; Ylimaki & Johnson, 2013), building a learning community (Drsydale, Gurr, & Goode, 2006; Mitchell & Sackney, 2001) and healthy school climate (Kirven, 2021; Velarde, Ghani, Adams, & Cheah, 2020). On the other hand, deciding to become a school principal or a deputy is based on some intrinsic and external movational factors in itself (Hancock, Müller, Wang, & Hachen, 2019). In order for school administrators to motivate others in the school organization, they must have inspirations to lead effectively and be motivated both intrinsically and externally. Accordingly, In their daily practices (Owen, Hadgson & Gazzard, 2004), school administrators' actions are partly related to their motivations for student achievement (Andrews & Soder, 1987; Darling-Hammond, 2000) and school improvement (Davies, 2002; Murakami-Ramalho, Garza, & Merchant, 2010). To accomplish these, they are required to give their best effort to make realize these aspirations. A growing body of research reveals that school administrators must have goal-oriented efforts, effective strategies, high level of self-efficacies as well as some fundamental skills, including motivating and rewarding so that sustainable effective schools can be achieved (Açıkalın, 1998; Ata, 2015; Harris, 2002; Maddock & Fulton, 1998; McCormic, 2001; Moran & Gareis, 2005; Paglis & Green, 2002; Pukey & Simith, 1983; Suddarth, 1988). In their studies, Duran and Cemaloğlu (2020) noted that successful school principals are those who are able to motivate teachers towards student learning and try to make teachers develop their teaching practices. In that case, what are the behaviors that lead the school administrators to success, increase their performance and direct them to lead effectively? In order to find an answer to this question, it is necessary to consider motivation and work behaviors of school adminisrators. Why are some school administrators more committed to their professions, some are less? Why do some start working early, others are late? Why are some of them happy while others not? (Suddarth, 1988).

A review of literature has presented abundant research on the significant effect of attitudes and behaviours of school administrators on teachers' motivation (e.g. Aksel, 2016; Duran & Cemaloğlu, 2020; Eyal & Roth, 2011), but there is a gap in the literature to be filled in terms of measuring the work motivations of school administrators themselves. Fernet (2011) posits that work motivation is a theme neglected by researchers in educational administraion (p.308). Bono and Judge (2003) argued that transformational leadership behaviors of school leaders significantly predict teachers' self efficacy and motivation levels. Accordingly, it can be noted that school principals' attitudes and behaviours have meaningful impact on school culture and school climate (Hallinger & Heck, 1998; Leithwood & Mascall, 2008). It can be noted that school principals must be self-motivated to be able to inspire others. In this sense, this study was designed to develop a scale towards measuring the work motivation levels of school administrators. The data that can be obtained through this scale can be employed to draw some conclusions their effectiveness, role attributes, and identity perceptions etc.

This paper is structured as follows. The contribution of this paper starts with an outline of the importance and impact of motivation on school principalship. I then continue with an examination of literature on motivation. This takes us to the rationale and the contribution of this research, followed by the purpose of the study. This is followed by the conceptual framework. After a description of the research methodology adopted, the paper presents the finding. It then includes a critique of the findings, presenting the subdimensions of the scale. I conclude by several theoretical and practical implications as well as limitations, adding several recommendations for the future research.

**Conceptual Framework**

**'Motivation' Theories**

Motivation theories present distinctive explanations and thesis towards work behaviors. Work behaviors are designed according to some innate traits of the personality. Also, in some circumstances, organizational determinants (nature of the work, reward and punishment system, setting directions, group effect, organizational climate and organizational culture) have a word on motivation and work behavior

(Suddarth, 1988). Motivation consists of elements such as the characteristics of the individual and the characteristics of the organization. Because the society in which the individual lives or the organization he works in is in a dynamic structure, the interactions involve the individual in the system. The individual, in a lively, hardworking, regular organization, generally adapts itself to this form. Thus, the individual is motivated by the organization. In some schools, the organizational climate is warm and humane. Employees have a corporate culture that they previously created (Bakioğlu & Güner, 2016).

The motivation triggered by interest and curiosity is called as intrinsic motivation. Intrinsic motivation is a natural trend that involves seeking and accepting challenges in the application of skills and the pursuit of personal interests. Fines and rewards are not required when the action itself is a reward. In short, intrinsic motivation is what drives us to do something while not having to do anything. Extrinsic motivation, on the other hand, rests on punishment and awards. There are goals such as gaining a good office, promotion based on merit, promotion, and avoiding what is being complained. It deals with what the action will bring to the individual rather than the action itself (Hoy & Miskel, 2010). Motivational factors which are fundamental to make teachers and school administrators have high level of motivations while performing their jobs are summarized in Table 1.

**Table 1.** The Summary of the Key Factors Explaining Work Motivation

| Key Factors | Optimum Conditions of Work Motivation | Conditions Lowering High Level of Motivation |
|---|---|---|
| Needs | Work Satisfies High Level Needs. | Work Satisfies Low Level Needs. |
| Goal | Realistic and Challenging Goals | Very Difficult or Easy Goals |
| Motivation | Motivation Caused by Achievement | Motivation Caused by Avoidance from Failure |
| Engagement | Work Oriented | Ego Oriented |
| Beliefs on Equality | Fair and Kind Behavior | Unfair and Disrespectful Behavior |
| Self-Efficacy | High Self-Efficacy | Low Self-Efficacy |
| Motivation Source | Intrinsic | Extrinsic |

(Source: Hoy & Miskel, 2010).

Motivation is defined as the forces that provide the emergence of behaviors in individuals and the ones that influence the person to exhibit their own behaviors in order to be beneficial to the organization. At this point, the individual's efforts are related to the size and intensity of the work-related behavior. For example, a school principal can put a lot of effort into using a variety of strategies to reduce student absenteeism. Continuity is related to the continuous efforts of employees in their work-related activities. While effort and continuity are related to the magnitude of the work done, orientation means that an employee should make an effort to benefit the organization (Lunenburg & Orstein, 2013). These dimensions of the motivation pave the way of motivation theories. Maslow proposed his hierarchy of needs theory in psychology as a motivation theory in 1943 (Table 2). Maslow's theory comprises a five-tier model of humans' needs, each of which is needed to satisfied if the individual is to move to the next. When the needs of the individual cannot be satisfied in any level, the needs in the next level aren't important. Some work motivation theories were developed, based on Maslow's theory (Bakioglu & Guner, 2016; Hoy & Miskel, 2010; Lunenburg & Orstein, 2013; Mathe, Pavie & O'Keeffe, 2014).

ERG motivation theory, based on Maslow's hierarchy of needs, rests upon three categories: Existence (E), Relatedness (R) and Growt (G) (Mathe, Pavie & O'Keeffe, 2014). ERG theory priorities in existence, relatedness and growth and these are the fundamental determinants of the motivation of employees. Thereafter, Herzberg attempted to determine the factors leading to motivation through Motivation-Hygiene, developed based on Maslow's hierarchy of needs and Alderfer's ERG motivation theory.

Instead of focusing on the intrinsic needs of the individual, Herzberg focused on the workplace environment, which reveals positive and negative attitudes developed in the minds of individuals towards

their work. According to Herzberg, motivation can be explained via two-dimensions. The first one is motivating factors and related to job satisfaction whereas the second one is factors called hygiene which are driving factors of the motivation. Achievement, recognition, the work itself, responsibility, advancement and growth are motivating factors. On the other hand, salary, work conditions, good managers, relationship with supervisor and peers, status and security don't lead to motivation, but they are considered as factors for dissatisfaction (Owens & Valesk, 2011, cited by Bakioglu & Güner, 2016).

**Table 2.** Maslow's Hierarchy of Needs Chart

| | **Main Factors** | **Level of Needs** | **Organizational Factors** |
|---|---|---|---|
| | | | Challenging work |
| Advanced Needs | Growth | Self-actualization (5) | Promoting in the organization |
| | Achievement | | Achivement |
| | Progress | | |
| | | Esteem (4) | Titles |
| | Self-esteem | | Statu Symbols |
| | Respect of others | Love/Belonging (3) | Appointment |
| | Respect by others | | |
| | | | Professional teams |
| | Friendship | Safety (2) | Supervision quality |
| | Being recognized | | Skillful work teams |
| | Intimacy | | |
| | | Physiological (1) | Secure work conditions |
| Basic Needs | Safety | | Secondary rights |
| | Assurance | | Work quarantee |
| | Stability | | |
| | | | Heat and Air conditioning |
| | Water | | Basic salary |
| | Food | | Work conditions |
| | helter | | |

(Source: Lunenburg & Orstein, 2013).

Afterwards, McClelland proposed his theory "achievement and acquired-needs theory". Individuals with a high level of motivation are assumed to have three main characteristics: First, they have a strong desire to take personal responsibility when doing a job or solving a problem. Secondly, people with a high degree of gain need to set logical goals for themselves and take moderate risks. Third, there is a strong desire for people who are in need of a high level of gain to receive feedback on their performance (Hoy & Miskel, 2010). According to McClelland, needs can be categorized as in three items: Achievement, Affiliation and Power.

*1. Achievement needs:* These types of people are ın motivated by success and are therefore pursuing success. They want to achieve and give realistic and compelling objectives in their work. Success is more important than material reward. The sense of achievement is important. They're in pursuit of progress.

*2. Affiliation needs:* These types need relationships and are motivated by interaction with other people. They want to be loved and loved.

*3. Power needs:* Such people are motivated by power. This reveals the need for influence. They have a strong desire to govern. They need status and prestige (Dönmez, 2013).

Hacham and Oldham, who predicted the importance of motivation in work life, developed the Theory of Job Characteristics by taking the strengths of classical organization theory and human relations theory. Job Characteristics Theory is a widely studied model that is useful in explaining important business results. The

model argues that some of the basic characteristics of work reveal the psychological reactions of the work and affect the work results. The five main features of this model include critical psychological states and outcomes.

Five Dimensions of Job Characteristics Theory

**1.** Skill variety (The complexity of skills and abilities to do the work).

**2.** Task identity (Having an identifiable definition of the job).

**3.** Task significance (how the job affects others' situations).

**4.** Autonomy (How the work permits personal initiative).

**5.** Job feedback (To what extent the work provides information about the work performance).

Psychological circumstances related to job

**1.** Experiences on the importance of the job

**2.** Experience of taking responsibility for the results of the job

**3.** Information on the results of work activities

Outputs:

1. High intrinsic motivation
2. High satisfaction
3. High job satisfaction
4. High job effectiveness

In a nutshell, Job Characteristics Theory attempts to explains the variables listed above and to develop new insights into work motivation (Ayandele & Nnamseh, 2014; Miner, 2005). Some studies on motivations of the employees working in educational organizations are presented in Table 3.

**Table 3.** Some Studies on Motivations of the Employees Working in Educational Organizations

| Theme | Authors |
|---|---|
| Principal leadership in low-performing schools: A closer look through the eyes of teachers | (Finnigan, 2012) |
| What makes a motivating teacher? Teachers' motivation and beliefs as predictors of their autonomy-supportive style | (Katz & Sharar, 2015) |
| The role of work motivation in psychological health | (Fernet, 2013) |
| Finding workable levers over work motivation: Comparing job satisfaction, job involvement, and organizational commitment | (Moynihan & Pandey, 2007) |
| School principals' approaches to motivate teachers | (Ozdemir, Kartal & Yirci, 2014) |
| Development and validation of the work role motivation scale for school principals. | (Fernet, 2011) |
| Job motivation in educational organizations. | (Miskel, Frain & Wilcox, 1980) |
| Principal self-efficacy: relations with burnout, job satisfaction and motivation to quit | (Federici & Skaalvik, 2012) |
| Linking vice-principals' perceptions of responsibilities, job satisfaction and career aspirations | (Walker & Kwan, 2012) |

Despite some of the above-mentioned studies on motivation in education organizations, a motivational scale for work that directly measures the work, motivation and commitment to the work that motivates school administrators has not been reached. Considering the importance of school management's unique value structure and its place in educational organizations, it shows the need to develop such a scale. From this point of view, such a scale has been developed. In this way, the elements and dimensions that motivate the school administrators will be better determined and the motivation status of the school administrators can be studied.

**Self-Determination Theory (SDT)**

Self-Determination Theory (SDT) is a common theoretical frame that receives increasing cross-cultural support (Deci & Ryan, 1985). It is also a macro-theory of human motivation associated with the development and functioning of personality within social contexts (Deci & Ryan, 2008). Roundy-Harter (2010) argues that SDT is related to the well-being of school principals. SDT offers a multidimensional frame to conceptualize the term 'motivation' and allows researchers to assess motivation in terms of level and quality (Gagne et al. 2014). Based on the SDT, Eyal and Roth (2011) hypothesized that followers' autonomous motivation is predicted by transformational leadership, whereas their controlled motivation is predicted by transactional leadership. They concluded that principals' leadership style, as perceived by teachers, was a predictor of teachers' motivation type and feelings of exhaustion in school.

**Work Motivation**

Work motivation is commonly defined as a set of triggering factors that affect the form, intensity and duration of work-related behaviors (Kanfer, 1990; Pinder, 1998). On the other hand, Kanfer, Chen and Pritchard (2008) argue that such a definition only address the cognitive, affective and behavioral sides of the concept, but work motivation also encompasses some other factors, such as content, context, and change. Further, they define work motivation as "the set of processes that determine a person's intentions to allocate personal resources across a range of possible actions" (p.4). In this sense, it can be noted that work motivation includes some distributional aspects, as well, so refers to the critical processes by which individuals have control over their behaviors.

The three C's of work motivation includes content, context and change in itself. The content refers to theoretical aspects of the concept and represents an understanding the individuals' mental structures that direct them to take action. Context, on the other hand, is related to the cultural, sociological, mutlilevel and social-developmental aspects of the concept. When it comes to change, it is a dynamic process occuring over time and is affected by internal and external factors of both individuals and organizations (Kanfer, Chen, &Pritchard, 2008).

Fernet (2011) developed and validated a scale to measure work role motivation in school principals: the Work Role Motivation Scale for School Principals (WRMS-SP). The WRMS-SP encompasses three subdimensions such as intrinsic motivation, three types of extrinsic motivation (identified, introjected, and external), and amotivation related to three work roles (administrative, instructional leadership, and informative). It was revealed that some contextual factors including occupational commitment and burnout, are more closely associated with the instructional leadership role than other work roles of school principals. This shows that some certain work roles are more salient than others in predicting their attitudes and well-being. The WRMS-SP, therefore, has the potential to explain significant work-related factors such as recruitment, retention, turnover, occupational health, performance (Fennet, 2011). Engin and Çam (2009) also developed and validated the the Turkish psychiatric nurses of job motivation scale and concluded that there exist two factors that explain the work motivation factors of nurses: instrinsic and extrinsic factors. Çivilidağ and Şekercioğlu (2017) adapted the multidimensional work motivation scale (*MWMS*) into Turkish culture

and concluded that the MWMS can be employed to assess work motivations in industry and organizational psychology in the Turkish Culture.

## Method

This research was designed as a quantative in its nature. Having been designed a descriptive study, the purpose of this inquiry is to dwell on school administrators' work motivation, to develeop an instrument to measure their work motivations and then to validate it. Researchers don't interfere with the phenomena in descriptive studies. Descriptive studies encompass such statistical techniques as frequency, percentage, central tendency measures, variability measures and correlation coefficient that are used to describe the features of a group (Büyüköztürk, 2007).

### Population and Sample

In order to recruit school administrators (school principals and deputies), I employed the convenience sampling method from non-probability sampling method in which the sample is taken from a group of people easy to contact or to reach. In convenience sampling, the target population is selected based on the purpose of the study if they meet some certain criterias such as easy accessibility, availability at a certain time, geographical proximity, or eager to volunteer (Dörnyei, 2007). In this sense, school principals and vice principals were recruited voluntarily in this study to form a study group. The numbers of the participants are presented in Table 4. A total of 268 school administrators were included in the study (Amasya MEM, 2015).

**Table 4.** The Number of School Principals and Vice Principals in Amasya Province

| Administrative Position | Population | Sample | % |
|---|---|---|---|
| School principal | 192 | 141 | 52,6 |
| Vice principal | 347 | 127 | 47,4 |
| Total | 539 | 268 | 100 |

The demographic characteristics of the participants are displayed in Table 5 below. According to Table 5, 14,6% of the participants were female and 85,4% were male. The ratio of school principals to school principals was 52,6%; The ratio of the vice principal is 47,4%. 90% of the school administrators have bachelor's degree and 10% have master degree. 25% of school administrators work in boarding schools and 75% work in day schools. The number of students in the schools where the school administrators work is between 0-250, 41%, 251-500, 35,4%, 501 and above, 23,6%.

**Table 5.** Demographic Information

| Variable | f | % |
|---|---|---|
| Gender | | |
| Female | 39 | 14,6 |
| Male | 229 | 85,4 |
| Position | | |
| School principal | 141 | 52,6 |
| Vice principal | 127 | 47,4 |
| Experience in administration | | |
| 1-5 years | 120 | 44,8 |
| 6-10 years | 56 | 20,9 |
| 11-15 years | 36 | 13,4 |
| 16-20 years | 31 | 11,6 |
| 21 years and above | 25 | 9,3 |
| Experience in teaching | | |
| 1-5 years | 13 | 4,9 |

| | | |
|---|---|---|
| 6-10 years | 35 | 13,1 |
| 11-15 years | 45 | 16,8 |
| 16-20 years | 65 | 24,2 |
| 21 years and above | 110 | 41 |
| Education status | | |
| Bachelor's degree | 241 | 90 |
| Master degree | 27 | 10 |
| School types | | |
| Pre-school | 17 | 6,3 |
| Primary | 66 | 24,6 |
| Secondary | 74 | 27,6 |
| High school | 98 | 36,6 |
| Other | 13 | 4,9 |
| School Structure | | |
| Boarding | 67 | 25 |
| Ordinary | 201 | 75 |

**Data Collection and Analysis**

A pool of item was formed through national and international literature review before conducting the school administrator's work motivation scale development. The pool first consisted of 38 items. Based on the field expert opinions, a total of 32 items were left for the analyses. Six items were deleted or merged with others. The 32-item scale was conducted on the school administrators to test its comprehensibility and suitability before the pilot application and necessary arrangements were made. The validity and reliability analysis was performed by using Exploratory Factor Analysis (EFA) for the data obtained from the pilot application. A certain sample size is require in order for the factor analysis to be effective and efficient. Researchers generally state that as a simple rule, the sample group should be at least five times the number of variables being included in the factor analysis (Alpar, 2010; Altınışık, Çoskun, Bayraktaroğlu & Yıldırım, 2007; Tavsancıl, 2006). In line with this aim, the School Administrators' Work Motivation Scale (SAWMS) was applied to 268 school administrators (school principal and vice principal) selected from different school levels. There are 32 questions in the scale and 5-point Likert Scale was used.

**Findings**

Exploratory Factor Analysis (EFA) was conducted to test the structure validity of the School Administrators' Work Motivation Scale (SAWMS). Kaiser-Mayer-Olkin Test was employed to test the suitability of sample size for factorization prior to EFA. KMO value was found to be .87. The fact that the KMO test is greater than .70, means that the sample size is sufficient. Additionally, it was found that KMO coefficient was suitable for factor analysis (KMO) of 0.85 <0.60. In addition, the determinant of the matrix was found to be ,002. The fact that the determinant of the matrix is> 0.0001 indicates that factor analysis can be performed (Can, 2017). As a result of the factor analysis and examination of the line graph (Figure1.), it was found that items were collected under three factors, and the total variance of them was calculated as 59.07%. Before EFA which was conducted for each factor, the number of the items were 32, but factor analyses resulted in 15 items (14, 16, 3, 8, 12, 17, 25, 23, 24, 22, 32, 29, 30, 31, 27) as those items whose factor load values were below .30, and so didn't work (1, 2, 4, 5 , 6, 7, 9, 10, 11, 13, 15, 18, 19, 20, 21, 26,28) were excluded (Büyüköztürk, 2009). The names of the factors and factor loads of the items are presented in Table 6.

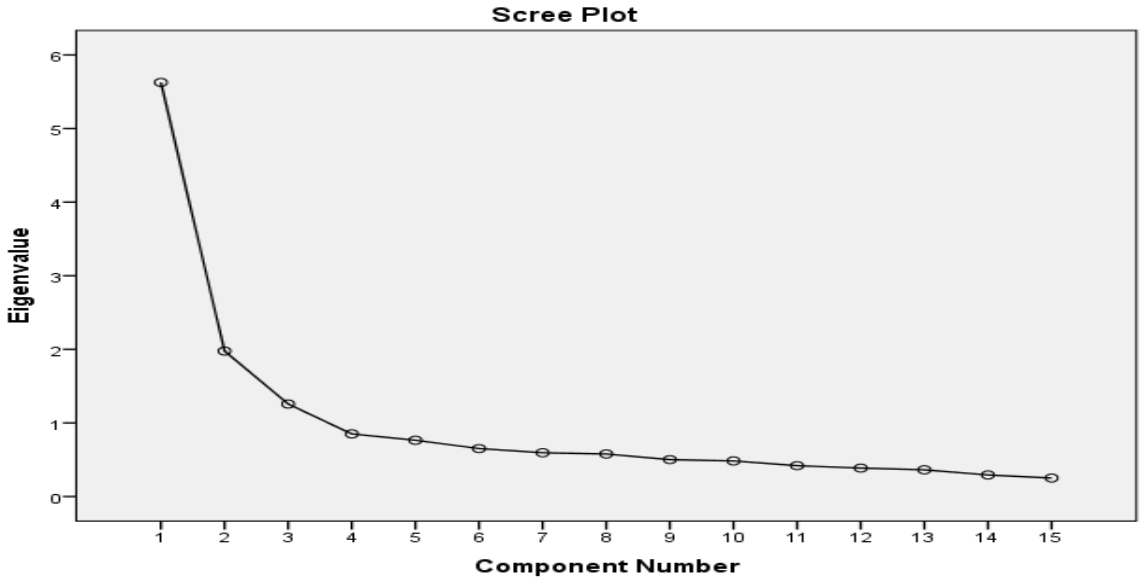


**Figure 1.** Scree line chart

As shown in Table 6, the data collection instrument has three subdimensions when the values are considered. Total explained variance rate of the scale is 59,07%. The contributions of the sub-dimensions to the total variance explained are as follows: (a) external subdimension 21,97%, (b) commitment subdimension 21,73%, and (c) internal subdimension 15,36%. Büyüköztürk (2009) and Tavşancıl (2006) assert that as the variance rates become higher in analyses, the structural validity of the scale increases, as well. On the other hand, in practice, it is sufficient to have variance rates between 40% and 60% in social sciences. According to this, it can be suggested that the explained variance is sufficient.

**Table 6.** Varimax Rotation in a Principal Component Analysis. Factor Loads After the Varimax Rotation

| Item No | Item | Factor Loads After the Varimax Rotation |
|---|---|---|
| | **External subdimension** | |
| 14 | I think that this profession gives more value to me. | **.783** |
| 16 | Being a school administrator makes me happy. | **.734** |
| 3 | Administrative position gives me reputation and power. | **.717** |
| 8 | I think that my social skills will develop thanks to being a school administrator. | **.651** |
| 12 | Administrative position increases the quality of my life. | **.648** |
| 17 | I believe I will be able to be appointed to higher levels of my career in education thanks to being a school administrator. | **.599** |
| | **Internal subdimension** | |
| 25 | I wish to affect people. | **.755** |
| 23 | To give directions as a leader of the school makes me happy. | **.732** |
| 24 | I consider school administration as a part of my personality. | **.664** |
| 22 | I love being foreground in the working environments. | **.662** |
| | **Commitment subdimension** | |
| 32 | I feel like I belong to this profession. | **.848** |
| 29 | I think I have found myself in my profession. | **.793** |
| 30 | This profession makes me happy to reach more people (students, teachers, parents, etc.). | **.786** |
| 31 | I think I can do this profession for longer periods. | **.767** |
| 27 | I am developing new goals by means of this work. | **.558** |

Total explained variance: 59,07%

**Confirmatory Factor Analysis (CFA)**

In order to verify the factor structures obtained following EFA, a total of 268 school administrators were recruited to conduct CFA. The factor structures obtained following EFA were verified through CFA, and the values of the relations amonf factors and the values of the indices indexes and their reference ranges are presented in Table 7 (Hazar & Demir, 2018). Lisrel 8.80 was used while conducting CFA.

**Table 7.** Confirmatory Factor Analysis (CFA) Results

| Fit Index Type | Goodness of Fit Indices Values | Acceptable Value | Observed Value |
|---|---|---|---|
| $x^2$ / sd | 0< $x^2$ / sd<2 | 2< $x^2$/ sd<3 | 2,22 |
| RMSEA | 0.00<RMSEA<0.05 | 0.05<RMSEA<0.10 | 0,06 |
| PGFI | 0.95<PGFI<1.00 | 0.50<PGFI<0.95 | 0,66 |
| PNFI | 0.95<PNFI<1.00 | 0.50<PNFI<0.95 | 0,78 |
| GFI | 0.85<GFI<1.00 | 0.90<GFI<0.95 | 0,91 |
| AGFI | 0.90<AGFI<1.00 | 0.85<AGFI<0.90 | 0,87 |
| IFI | 0.95<IFI<1.00 | 0.90<IFI<0.95 | 0,97 |
| NFI | 0.95<NFI<1.00 | 0.90<NFI<0.95 | 0,94 |
| CFI | 0.95<CFI<1.00 | 0.90<CFI<0.95 | 0,97 |

The results of CFA related to SAWMS are presented in Table 7. As shown in Table 7, the standardized coefficients of SAWMS vary from .29 and .70, while the error variances range from .54 and .84. The fit indices of the model can be given as $x^2$ /sd=2,22, RMSEA= .06, PGFI= .66, PNFI=.78, GFI= .91, AGFI= .87, IFI= .97, NFI= .94, CFI= .97.

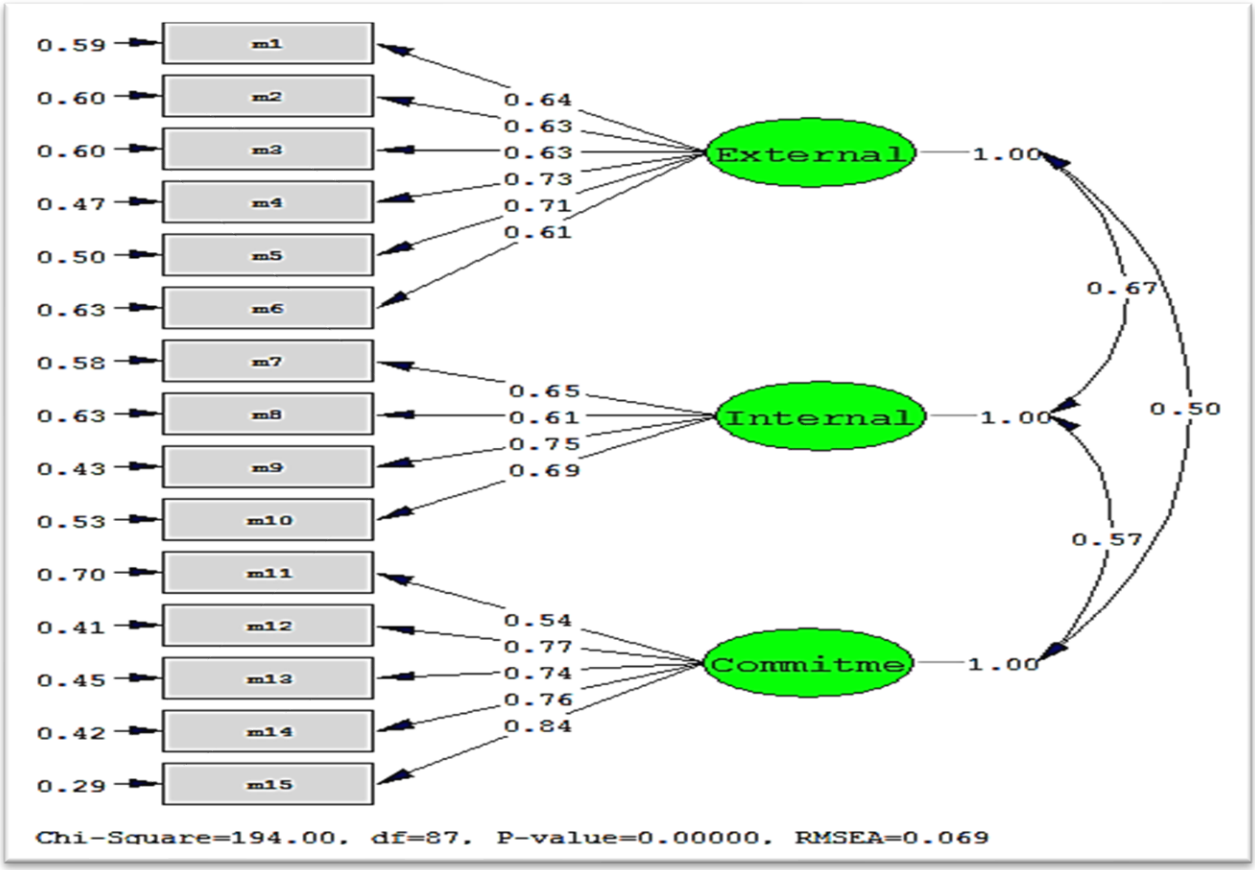


**Figure 2.** Confirmatory factor analysis results

In order for testing the reliability of the instrument, the Cronbach's Alpha Coefficient was calculated. In this sense, the Cronbach's Alpha Coefficient of the SAWMS was found as 0.87. On the other hand, the

reliability coefficients of each subdimension can be listed as follows: (a) external subdimension .81, (b) commitment subdimension .76, and (c) internal subdimension .84.

**Result and Discussion**

As a result of this study, when the EFA results of SAWMS are examined, it can be noted that item factor loads in the SAWMS scale are generally at high levels (from .84 to .55). The factor loads and their contributions to the total variance explained are at high levels: (a) external subdimension 21,97%, (b) commitment subdimension 21,73%, and (c) internal subdimension 15,36%. The reliability coefficient of the scale is .87. At this precise point, the fact that reliability coefficients are at high levels means that the scale is a reliable one (Can, 2017). On the other hand, given the numbers of the items in the instrument, it can be noted that this will make it easy to be used in future studies. According to the results of CFA, the overall goodness between the chi-square-$x^2$ and degrees of freedom (df) is below 3 (194/87 = 2,22). The fit indices show that the model provides a good fit with the data. When the root mean square error of approximation fit index (RMSEA) in the path model is examined, it is .05. The fact that the Standardized Root Mean Square Residual (SRMR) is below .05 indicates an overall goodness. Other indices also show good fit CFI= .97, NFI=.94, AGFI= .87 (Çokluk, Şekercioğlu & Büyüköztürk, 2010). Based on these results, It is thought that this instrument has structural validity and is a reliable one. In this sense, School Administrator Work Motivation Scale (SAWMS) can be used to measure the motivation levels of school administrators towards their profession.

The results of this study show the multidimensional nature of school administrators' work motivations. Fernet (2011) also concluded that the work motivation of school principals includes several subdimension in itself and listed these as follows: principals' self-efficacy in the three roles, transfor- mational leadership, work satisfaction, occupational commitment, and burnout).

**Theoretical and Practical Implications**

The findings of this scale development and validation study has some theoretical and practical implications. Theoretically, this research has revealed that school administrators' work motivation is predicted by external and internal factors as well as commitment. Practically, on the other hand, these subdimensions can be employed to determine the motivational factors in educational organizations and can be addressed in interviews conducted for recruiting school administrators.

**Limitations and Recommendations for Further Research**

As it is in most of the scientific inquiries, this research is also subjected to some limitations, as well. First, the findings of this scale development and validating research display some factors that predict the work motivations of the school administrators. In the light of these findings, I would recommend to researchers to dwell on other factors that are theoretically linked to school principals' work motivations especially in terms of contextual factors (e.g., school related variables) and such variables as accountability reforms, etc. Further, it would yield fruitful results to design longitudinal studies. On the other hand, **t**his scale was developed on school administrators. It can be noted that this research will serve as a base for future studies on work motivation of administrators. Further work needs to be performed to develop new scales on other educational staff, administrators in central offices in provinces.

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iojes
www.iojes.net
International Online Journal of Educational Sciences
ISSN: 1309-2707

# Teaching Geometry through Augmented Reality Activities Using Three-Dimensional Modelling*

*Research Article*

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**To cite this article:** Topraklikoglu, K., & Ozturk, G. (2021). Teaching geometry through augmented reality activities using three-dimensional modelling, *International Online Journal of Educational Sciences*, *13*(5), 1325-1342.

ARTICLE INFO

*Article History*:

Received: 13.10.2020

Available online: 08.11.2021

ABSTRACT

The aim of this study is to determine whether augmented reality activities that are designed and developed through three-dimensional modelling software have a beneficial effect on improving students' spatial abilities in a seventh-grade mathematics class and to reveal the students' views on augmented reality activities. The study was conducted using a design based research model including mixed methods research designs. The study group was comprised of 53 seventh-grade students from a secondary school in a city located in the west of Turkey. The study group was formed by convenience sampling method. Quantitative data for the study were collected using a spatial ability test. Qualitative data, on the other hand, were obtained from semi-structured interviews with the students. In the analysis of quantitative data, descriptive statistics and paired samples t-test were applied. Qualitative data were analysed using the content analysis method. In the data analysis results obtained from the spatial ability test, a statistically significant difference between pre-test and post-test scores was detected in favour of the post-test. In the interviews, students expressed their positive opinions about the mathematics class involving augmented reality activities.



**Keywords:**
augmented reality, images of objects in different orientations, teaching geometry, three-dimensional modelling

## Introduction

The rise in technological advances has brought to an end the era of the teacher's role being to teach knowledge and the students' role being to store that knowledge (Demirer & Erbaş, 2015). The purpose of teaching has transformed, where now the aim is to provide learning by getting the most out of technology in

* This study is a part of the research project numbered as 2017/035 supported by Balıkesir University, and it is part of the master's thesis prepared by the first author under the supervision of the second author. Also, the study is an extended version of the oral presentations presented in 14th International Computer & Instructional Technologies Symposium held in Özdere/İzmir on May 2-3-4, 2018.

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DOI: https://doi.org/10.15345/iojes.2021.05.003

as economic way as possible (Beşoluk, Kurbanoğlu, & Önder, 2010). The provision of learning in environments where the interaction and active participation of the students take place through the integration of the teaching environment with technology has gained importance (Tezci & Perkmen, 2013). Teaching environments that utilize technology effectively are accepted as an indicator of high-quality teaching (Çakır & Yıldırım, 2009), and moreover, environments that make use of information technologies have a positive impact on the learning process and prepare the ground for learning (Beşoluk et al., 2010).

In terms of integrating the teaching environment with technology, the concept of augmented reality [AR], which functions to create enriched teaching environments that involve the use of multiple sensory organs, has recently emerged (Baki, 2006; Lai & Hsu, 2011). AR is a technique that combines the real physical world and virtual objects (Nam, 2015). AR creates environments where in virtual reality is incorporated into reality. To illustrate, in a study conducted by Liarokapis et al. (2004), the augmented image of a mechanical item was created. As the camera detected the mechanical item, both the three-dimensional images and the descriptions of the other components related to that item were displayed on the screen. In other words, three-dimensional images of the other components were presented in the teaching environment by using a single part of an automobile engine. In this manner, it became possible to observe what kind of actions and movements occur every second in an automobile engine. AR is a type of technology that provides the opportunity to see virtual models simultaneously with the actual image that appears on the screen (Azuma, 1997). AR has the potential to be applied in many sectors, including entertainment, advertising, marketing, health and education, outside of those in which it has already been used for teaching purposes, like the health and military sectors (Gürler, 2015). With the assistance of AR, students are able to visualize complex relations and abstract concepts, have fun learning and stay engaged in class (Yılmaz, 2014).

To develop AR applications, AR software, such as Alive, Augmented, Blipper, Junaio, Layar, Vikitude and HP Reveal (Aurasma), can be used (Demirer & Erbaş, 2015). Other than web-based platforms, game engines used by game developers, can also be utilized to develop AR applications thanks to a wide number of add-ons available. Platforms like Unity and Unreal platforms can be mentioned as examples offering this opportunity (Turgut & Varlı Denizalp, 2021). Furthermore, by installing plug-ins like Vuforia, ARKit, ARToolkit and ARCore, AR applications can be designed and subsequently adapted to run on smartphones, tablets and personal computers.

Geometry is a discipline concerned with the properties of geometric objects and shapes and their relations with each other. The National Council of Teachers of Mathematics [NCTM] (2000) defines geometry as a collection of studies on space and shapes. Activities involving geometric shapes, such as drawing, identifying, grouping and matching, are suggested for supporting students in making connections between geometric abstractions and real, everyday objects from their lives (NCTM, 2000). In addition to exercises that include finding geometric shapes in items found in nature, it has also been suggested that students have the opportunity to measure geometric structures like edges and angles on real objects as well as on models and to practice seeing general principles at work (Toptas, 2008). Students should be provided the opportunity to identify and understand three-dimensional geometric shapes and to use their spatial abilities (NCTM, 2000).

Spatial ability is defined as the mental representation of two- or three-dimensional objects and the perception of objects in different orientations. Spatial ability, also referred to as spatial visualization in some sources, is also defined as the ability to visualize objects and to rotate their images in different orientations (Ekstrom, French, Harman, & Dermen, 1976; Smith, 1998; Turğut, 2007; Werdelin, 1961). It is extremely important that humans, whose lives are spent among three-dimensional objects in a three-dimensional physical world, have the capability, or spatial ability, to visualize the position and ordinary movements of objects within their own location. In this sense, it is essential that students be given the opportunity to enhance their ability to visualize the change of position and orientation of objects (Kalay, 2015).

In a two-dimensional environment, it can be quite challenging for students to understand various aspects of geometry, like geometric objects in different orientations, geometric concepts and geometric relations, all of which require three-dimensional thinking and spatial ability (Accascina & Rogora, 2006; Sarkar, Kadam, & Pillai, 2020). In traditional environments, which involve primarily the use of textbooks and boards in teaching, three-dimensional shapes are drawn on two-dimensional surfaces. As a result, students fail to perceive three-dimensional shapes properly or to gain visualization skills at early ages (Accascina & Rogora, 2006; Rossano, Lanzilotti, Cazzolla, & Roselli, 2020). In order to avoid this unfortunate situation, technology-enhanced student-centred learning should be implemented in learning environments, and rather than paper and pencil exercises on a two-dimensional surface, concrete three-dimensional structures should be used. Furthermore, in order to provide more permanent learning, activities should be properly carried out with students in the right place at the right time. In this regard, AR and the use of three-dimensional modelling are one of the current techniques applied to enhance visualization ability (Avila-Garzon, Bacca-Acosta, Kinshuk, Duarte, & Betancourt, 2021; Bacca, Baldiris, Fabregat, & Graf, 2014; Erbaş & Atherton, 2020; Erbaş & Demirer, 2014; Kerawalla, Luckin, Seljeflot, & Woolard, 2006; Majid & Salam, 2021; Rossano et al., 2020). In the present study, AR was applied in teaching a seventh-grade mathematics subject, titled "images of objects in different orientations", with the expectation that it would have a positive effect on the students' construction of knowledge and prove to be a successful teaching tool. However, the studies that have been conducted on this subject have shown that AR platforms have been used in the teaching process merely for displaying images and videos rather than for presenting three-dimensional models (Bower, Howe, McCredie, Robinson, & Grover, 2014; Connolly & Hoskins, 2014; Önder 2016). Only a very limited number of studies have examined the effect of AR applications on the improvement of students' spatial abilities (Ibañez, Uriarte, Zatarain, & Barrón, 2020; İbili, Çat, Resnyansky, Şahin, & Billinghurst, 2020; Kim & Irizarry, 2021; Rohendi &, Wihardi, 2020). Considering these shortcomings, this study can make an important contribution to the literature. As stated above, in this study, AR activities using three-dimensional modelling were designed and implemented in a seventh-grade mathematics classroom of a secondary school. The following research questions were developed in this study to investigate whether these activities would influence the improvement of students' spatial abilities are as follows:

1. How are the AR activities using three-dimensional modelling designed and implemented?
2. What are the students' spatial ability test scores before and after teaching the "images of objects in different orientations" subject, and do these activities influence the improvement of students' spatial abilities?
3. What are the students' opinions about the AR activities?

## Method

### Research Design

The study was conducted using a design based research model (Anderson & Shattuck, 2012). The design based research model focus on designing and developing innovations such as teaching activities and may include mixed methods research designs, where qualitative and quantitative research methods are used together (Kuzu, Çankaya, & Mısırlı, 2011; The Design-Based Research Collective, 2003). Mixed methods research designs are defined as methodologies involving the collection, integration and analysis of both quantitative and qualitative data (Creswell & Clerk, 2007). With descriptive research designs, first, data are obtained using the quantitative method, followed by the collection of qualitative data to complement and gain a clearer understanding of the findings obtained from the quantitative method (Fraenkel and Wallen 2012). In collecting the quantitative data for this study, one-group pre-test-post-test design was applied, and for qualitative data, a case study design was used (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz, & Demirel, 2014; Yıldırım & Şimşek, 2011).

**Study Group**

The study group included 53 seventh-grade students from a secondary school in a city located in the west of Turkey and was formed using the convenience sampling method. The convenience sampling method is a type of sampling method whose primary aim is to avoid the loss of time, money and labour by sampling from readily accessible participants (Büyüköztürk et al., 2014). The demographic characteristics of the students in the study group are presented in Table 1.

**Table 1.** Demographic features of the students in the study group

| | | Gender | | |
|---|---|---|---|---|
| | | **Female** | **Male** | **Total** |
| Age | 13 | 27 | 16 | 43 |
| | 14 | 8 | 1 | 9 |
| | 15 | 1 | 0 | 1 |
| Total | | 36 | 17 | 53 |

As can be seen in Table 1, there were 39 female and 14 male students in the study group. The ages of the students ranged from 13 to 15 years old. Within this range, 43 of the students were 13 years of age, 9 were 14 years of age and one was 15 years old.

**Data Collection Tools**

A spatial ability test and semi-structured interview forms were used to collect data. The Middle Grades Mathematics Project (MGMP), developed by Lappan, Phillips, and Winter (1984) and adapted to Turkish by Turğut (2007), was used for the spatial ability test to determine the effect of AR activities on the participants' spatial ability improvement. In the Turkish version developed by Turğut (2007), the items that were determined through expert reviews to be above the academic level of middle school students were removed from the test. With the removal of these items, new age-level appropriate items were added, leaving the test with 31 items in 6 types appropriate for middle school students. As significant changes were made to the test, a pilot study for the new test was performed. Based on the results from the pilot study, the items determined to have a poor discrimination index were removed from the test. The reliability coefficient of the final test, which featured 29 items, was calculated to be 0.830, which confirmed that the test did in fact measure the spatial ability skills of middle school. The newly developed test was titled the Spatial Ability Test [SAT] (Turğut 2007). The highest and lowest scores possible on the test were 29 and 0, respectively.

To determine the students' opinions about AR activities, semi-structured interviews were conducted with the study participants. The interview method is a data collection tool used to reveal what people think, why they think the way they do, what their feelings and attitudes are, and the factors directing their behaviours (Ekiz, 2003).

In the semi-structured interview method, interview questions are prepared in advance, but flexibility is provided by allowing the interviewer to rearrange the questions during the interview process (Ekiz, 2003). In this study, a literature review was conducted to help determine the interview questions. To confirm the validity of the interview questions, two experts from the field of education shared their opinions, and based on their suggestions, necessary changes were made to the interview form. The interview questions were then asked to the participants to obtain their opinions about the AR activities for teaching the "images of objects in different orientations" subject.

**Data Analysis**

The SAT was applied both as a pre-test and as a post-test before and after the implementation process. The quantitative data obtained from the SAT were coded and analysed through SPSS Statistics 24. In order to

check whether the data were encoded correctly, the consistency between the values entered in SPSS and those in randomly selected papers was checked. In the data analysis, students' total spatial ability scores and their mean scores were calculated and examined.

As part of the data analysis process, in order to determine whether to apply a parametric or non-parametric test, an examination of whether the total scores obtained by the students in the pre-test and post-test showed normal distribution was made. Skewness and kurtosis values were examined to determine the normality of the data (Çokluk, Şekercioğlu, & Büyüköztürk, 2014). The skewness and kurtosis values related to the students' total scores obtained on the SAT are presented in Table 2.

**Table 2.** Skewness and kurtosis values of the SAT Scores

| | **Skewness** | | **Kurtosis** | |
|---|---|---|---|---|
| | Value | SE | Value | SE |
| Pre-test | -0.160 | .327 | -0.855 | .644 |
| Post-test | -1.027 | .327 | -0.067 | .644 |

*Note*. SE = standard error

Skewness and kurtosis values that are in the range of -1 and +1 indicate that the scores do not differ significantly from the normal distribution (Çokluk et al., 2014). Aminu and Shariff (2014) stated that in cases when the skewness value is greater than +3 and the kurtosis value is greater than +10 in large samples, normality problems arise. Histogram, Q-Q, box-line and detrended graphs were also examined, with the results showing that the data demonstrated normal distribution (Alpar, 2016). Since the data had normal distribution, the t-test was selected for the paired samples from among the parametric tests to compare the pre-test and the post-test data (Büyüköztürk et al., 2014).

The data obtained from the interviews were transcribed into written form, and the content analysis method was used for the data analysis. Content analysis is an analysis and interpretation method that is conducted by organizing the collected data logically based on the concepts that emerge after conceptualization and determination of the themes accordingly (Yıldırım & Şimşek, 2013).

**Validity and Reliability of Data**

In quantitative research, validity means that the measurement tool accurately measures the factor in question, whereas in qualitative research, validity is defined as the researcher's objective observation of the factor under investigation (Bademci, 2011; Yıldırım & Şimşek, 2013). The validity studies for the SAT were conducted by Turğut (2007). In the present study, the reliability coefficient for the participants' pre-test data was 0.870 and 0.912 for the post-test data. Büyüköztürk et al. (2014) state that a reliability coefficient of 0.70 and above for a scale is acceptable for fulfilling the requirement of being a reliable scale.

The data obtained from the transcription of the interviews conducted with the students to confirm the reliability of qualitative data were encoded and checked during the content analysis process. Afterwards, the data obtained from five randomly selected students were encoded by the second researcher to confirm intercoder reliability. Intercoder reliability was calculated as 0.93 using the following formula: reliability=(number of agreements)/(total number of agreements and disagreements) (Miles & Huberman, 1994). In addition, for the reliability of the coding, the data obtained from the interviews with the randomly selected five students were re-coded two months later by the same researcher who had encoded all the data before. Using the same formula as applied in the first coding, the reliability was calculated as 0.98. Miles and Huberman (1994) stated that an internal consistency coefficient of around 0.90 is sufficient for the reliability of the data.

## Findings

The first research question of the study was "How are the AR activities using three-dimensional modelling designed and implemented?" To answer this question, preparation of AR activities using three-dimensional modelling was explained as follow:

The AR activities using three-dimensional modelling were designed and developed in accordance with an instructional design model featuring the five phases of ADDIE, namely *analysis*, *design*, *development*, *implementation* and *evaluation* (Şimşek, 2009).

In the *analysis* phase, the interviews conducted with the domain experts and the teachers revealed that there was a shortage of relevant instructional materials for the "images of objects in different orientations" subject, which requires concretization and visualization. It was further discovered that teaching three-dimensional objects on a two-dimensional surface was a sizable challenge for both the students and the teachers, and that there was a need for teachers to be supplied with instructional materials that could assist students in improving their three-dimensional thinking capabilities. It was determined from the information ascertained in the interviews that worksheets should be prepared for AR activities using three-dimensional modelling. The outcomes of the "images of objects in different orientations" subject from the seventh-grade mathematics curriculum (Ministry of National Education [MoNE], 2013) were examined prior to preparing the worksheets.

In *the design* phase, the 3ds Max application, a three-dimensional [3D] modelling software package, was chosen to design the necessary 3D models for the AR application. It was determined that the worksheets should include five different types of activities to meet the course objectives. The selected activity types were as follows: matching, selection, two-dimensional drawing, isometric drawing using two-dimensional drawing, and isometric drawing using AR images. With the development of two activities for each type, ten activities were prepared in total. Necessary corrections were made based on expert views taken from a mathematics teacher as well as a lecturer in the Department of Mathematics Education. Different target images corresponding to each activity were designed, which meant, in other words, that 10 target images were prepared for the 10 activities mentioned above. Target image visuals were selected to ensure that the geometric shapes captured the target images in the best way possible. In this sense, shapes that were generally complex but had clear outlines were selected.

In *the development* phase, 3D models were converted into an AR application through HP Reveal (Aurasma). This AR application was implemented through worksheets administered to a pilot study group comprised of 21 students. During the implementation process, any problems derived from HP Reveal were detected. The problems detected included the following: HP Reveal was unable to work without internet connection; some devices couldn't connect to the internet; access to the HP Reveal platform was denied by the internet infrastructure of MoNE; and 3D models failed to track the target images properly despite a proper internet connection. Due to the problems encountered during the pilot study, a search was conducted for alternative platforms to develop the AR application. From this search, it was found that via a set of add-ons, the Unity3D platform would have the capability to implement the planned AR application and thus it was decided that the AR activities would develop on the Unity3D platform. The advantages of the AR applications created with Unity3D were that during the implementation, it worked without an internet connection, and that the 3D models were able to track the target images properly. In addition, each separate target image corresponding to each of the activities could be run via a single "apk" file. How to install and use the Vuforia plug-in required to create the AR applications with Unity3D was investigated, and the AR camera component in the plug-in was added to the hierarchy. The height and angle of view was adjusted to enable the AR camera to best detect the target images. Separate target images of the 10 activities were placed in hierarchic order under the AR camera, and related 3D models were inserted in each target image. Positions, orientations and

sizes of the 3D models were adjusted accordingly, and only one 3D model, namely the 3D model of the detected target image at that time, was displayed alone on the screen. Next, the compilation process of the program started. An AR application file named "Geo-Etkinlikler.apk" was created in accordance with Android 4.1 JellyBean (API Level 16), the minimum system version supported by Unity3D. With the aim of making the 3D models appear on the screen, target images were specially designed for each of the 10 activities, and then printed in colour (Annex 1). The printouts were laminated using a laminating machine to prevent distortion of the 3D images due to the curving or folding of the printouts when examining them in different orientations. This kept the laminated target images from wearing out and prevented a disconnection in the AR application while the students were holding and rotating the printouts.

In *the implementation* phase, the application file called "Geo-Etkinlikler.apk" was uploaded to the students' mobile devices. Considering the time allocated for the "images of objects in different orientations" subject in the seventh-grade mathematics curriculum, the duration of the activity was limited to five class periods. As the 53 students who participated in the process attended their lessons in three different classrooms, the implementation of the application was carried out for five class periods per classroom. Although the instructions on worksheets clearly stated what was required for each activity, the students were also verbally informed about the content of the activity, and necessary support along with guidance were provided to them. During the implementation process, for the sake of helping the students make efficient use of their time, especially in the last two activities, they were briefly informed about how to make isometric drawings. Students were assisted in forming groups of two or three. A target image of the performed activity and one worksheet per member were distributed to each group (Annex 1). When the time allocated for an activity expired, the worksheets and target images were collected, and other worksheets and target images were distributed. With this process, all the activities were able to be completed in five class periods. An image of the implementation process is given in Figure 1.

**Figure 1.** An image of the implementation process

In the *evaluation* phase, first, a formative evaluation of the developed AR application was conducted by regularly taking views from experts and through a pilot study. The activities were finalized after benefitting from the positive and negative feedback provided by the students on the AR application, from the

observations during the pilot study and from the suggestions of the experts. The corrections and changes made were explained in the development phase. Evaluation of the results from use of the AR application, on the other hand, was carried out by examining the change in the students' spatial ability post-test scores as compared to their pre-test scores.

The second research question of the study was "What are the students' SAT scores before and after teaching the "images of objects in different orientations" subject, and do these activities have an effect on the improvement of students' spatial abilities?". The SAT consists of 29 multiple choice questions to measure the students' spatial abilities, with the lowest possible score being 0 and the highest being 29. Table 3 presents the descriptive statistics of the SAT scores obtained by the 53 students participating in the study.

**Table 3.** Descriptive statistics of the SAT scores

| Measurement | n | NoQ | Minimum | Maximum | $\bar{x}$ | SD |
|---|---|---|---|---|---|---|
| SAT (pre-test) | 53 | 29 | 4 | 27 | 16.43 | 6.200 |
| SAT (post-test) | 53 | 29 | 5 | 29 | 20.74 | 6.763 |

*Note*. N = number of students; NoQ = number of questions; $\bar{x}$ = mean; SD = standard deviation

As can be seen in Table 3, the pre-test mean score on the SAT was 16.43, while the post-test mean score was 20.74. In order to determine whether the difference between pre-test and post-test scores was statistically significant, a t-test was implemented for paired samples. The t-test results are presented in Table 4 below.

**Table 4.** Paired sample t-test scores of SAT

| Measurement | n | $\bar{x}$ | SD | df | t | p | $\eta^2$ |
|---|---|---|---|---|---|---|---|
| SAT (Pre-test) | 53 | 16.43 | 6.200 | 52 | 4.618 | .000 | .0916 |
| SAT (Post-test) | 53 | 20.73 | 6.763 | | | | |

*Note*. N = number of students; $\bar{x}$ = mean; SD = standard deviation; df = degree of freedom

It can be seen that there was a significant difference between the total scores on the pre-test and post-test in favour of the post-test ($t(52)=4.618$; $p<.05$; $\eta^2=.0916$) in Table 4. This finding can be interpreted to mean that teaching with AR activities has a positive effect on the improvement of students' spatial abilities. Using the paired samples correlation coefficient value between the group means and the standard deviation values revealed by the t-test, Cohen's d value was also calculated ($d=0.635$). Since the d value was found to be greater than 0.6, it was concluded that the two means had an intermediate effect size (Cohen, 1988; Lenhard & Lenhard, 2016). Based on the calculated eta-square ($\eta^2$) and Cohen's d values, the effect of teaching with AR activities on the improvement of students' spatial abilities were at a medium size.

The third research question of the study was "What are the students' opinions about the AR activities?" To address this question, semi-structured interviews were conducted with the participants, and the data obtained from the interviews were transcribed into written form and analysed afterwards using the content analysis method.

The first question asked in the interview was "Had you ever used an AR application prior to it being implemented in your classroom? If yes, how?". Four of the students stated that they had used an AR application in their courses before, while 49 of them stated that they had not. The following three questions were asked to the four students who answered yes to the previous question: What was the level of the class when you used it? In which course did you use it? For what purpose and how did you use it? Regarding the answers to these questions, three students stated that they had used an AR application in a sixth-grade mind games class, while one student stated that he had used it in a sixth-grade science class. It is possible that this experience may have affected the students' viewpoints on the AR applications rather than on the subject of

geometry, since the students who had not used an AR application before were introduced to the AR application via this study, experiencing the use of AR for the first time in geometry teaching.

Regarding the second question, "What do you think about AR?", none of the students' opinions about AR were coded as negative, as 51 had opinions coded as positive and two as neutral. Those whose opinions about the AR were coded as positive provided responses like, "*I think it should be implemented in the lessons; it is a pretty good application*" (Student 43), while the students whose opinions were coded as neutral provided responses like, "*I think it's quite useful, given that it doesn't deviate from the purpose*" (Student 23) and *"I don't think it is a ground-breaking application, but sensible projects can be produced with it."* (Student 24).

For the third question asked to the students, "What do you think about the AR application implemented in the mathematics classroom?", 47 of the students stated opinions coded as positive, one stated an opinion coded as negative and five stated opinions coded as neutral. The students whose opinions were coded as positive regarding the AR applied in the class provided responses like, *"It has made the mathematics course more efficient*" (Student 42), while those whose opinions were coded as negative provided responses like, "*I didn't like it much*" (Student 9). The students whose opinions were coded as neutral provided responses such as "*Not bad.*" (Student 12*),* "*I think it is not very useful; nevertheless, it can still be successful.*" (Student 24) and "*It would be nice to apply it in the class if a course related to technology was put into practice again in eighth-grade and in high school.*" (Student 44). In the light of these responses to this interview questions, it can be concluded that the students enjoyed the mathematics class involving the teaching of geometry AR activities, and that they largely had positive opinions about the mathematics course taught in this way.

For the fourth question asked to the students, "What do you think about the use of the AR applications in other courses?", 35 stated opinions coded as positive, 11 stated opinions coded as negative, five stated opinions coded as undecided/ no opinion and two stated opinions coded as neutral. The students whose opinions were coded as positive about the use of AR in other courses provided responses like, *"I think it should be used in every lesson"* (Student 14), while those whose opinions were coded as negative provided responses like, *"I do not think it would be useful"* (Student 43). The students whose opinions were coded as undecided/no opinion provided responses such as, "*I have no idea, as I never used it in other courses before*" (Student 28). Students whose opinions were coded as neutral provided responses like, "*It has good sides as well as absurd ones*" (Student 10), and "*It can be quite useful in quantitative courses, but not in lectures*" (Student 35). Although some of the students failed to offer clear responses about the use of AR applications because they had never used this kind of application in other lessons before, the majority (35 participants) replied to the questions positively, meaning that the majority were satisfied with the implementation process.

For the fifth question, the students were asked, "What are the advantages and disadvantages of using the AR applications in the courses?". As for the advantages of the AR application, one of the 30 students whose opinions were coded as "The AR applications are supportive", replied saying, *"It can help us understand the subjects better"* (Student 29). One of the 10 students whose opinions were coded as "The AR applications are useful", stated, *"It makes the lessons useful and efficient"* (Student 42); one of the eight students whose opinions were coded as "The AR applications are motivating", said, *"Viewing the objects from different aspects is interesting"*; and one of the three students whose opinions were coded as "The AR applications are creativity-enhancing", stated, *"My imagination has improved"* (Student 48). Two of the students stated that the AR applications had no advantage at all. As for the disadvantages of the AR applications, two of the six students whose opinions were coded as "The AR applications may create distractibility or classroom management problems" provided responses like, *"There can be a tendency to get distracted by the phones or tablets, and it will not be very healthy"* (Student 24) and *"It causes distraction"*(Student 32). One of the two students whose opinions were coded as "The AR applications can cause charging problems on tablet computers or on smart phones", stated, "*They are running out of battery*" (Student 2); one of the three students whose opinions were coded as

"The AR applications may lead to inefficient use of time" provided the response, "*It takes too long time for us to carry out a task*" (Student 8); one of the two students whose opinions were coded as "The AR applications may create health problems", said, "*It causes eye defects as well as backaches*" (Student 26); and one of the three students whose opinions were coded as "AG applications may have other disadvantages" provided the response, *"As the use of mobiles phones and tablets is banned from the school, in order to use this application we have to get permission every time"* (Student 35). A total of 37 students stated that the AR applications did not have any disadvantages. It can be concluded from these responses that implementing the AR applications in the courses would be beneficial for students, as most of the students felt that the AR applications had more advantages than disadvantages.

For the sixth question, the students were asked, "What do you think about your acquisition of the subject matter?" or otherwise stated, "Do you think you have learned the subject 'Images of objects in different sizes' or not?". A total of 47 of the students said that they had learned the subject matter, while two stated that they could not learn it and four said they had failed to learn it entirely. The students whose opinions were coded as "I couldn't learn the subject" provided responses like, *"I have learnt little"* (Student 9) and *"I may be deemed to have learnt it"* (Student 37). A follow-up question, "Do you think learning with the AR application is useful or not?", was directed to the students, where 49 of the students stated opinions coded as "Learning with the AR applications is useful", while two opinions were coded as "Learning with the AR applications aren't useful" and the remaining two opinions were coded as "Learning with the AR applications can have both useful and harmful aspects". Students whose opinions were coded as "Learning with the AR applications can have both useful and harmful aspects" provided responses like, "*It may be useful, but it has harmful aspects as much as it is useful*" (Student 24) and "*I think it is useful, but students should not be allowed to disrupt the class*" (Student 53). Related to the sixth question, another follow-up question "Do you think learning with the AR applications is fun or not?" was asked to the students, where 47 of the responses made by the students were coded as "Fun", two were coded as "Not fun", and two were coded as "Neither fun nor miserable". Two of the students stated that they had no idea while one of the students whose opinions were coded as neutral stated, "*It is fun but sometimes problematic when it fails to scan the image instantly*" (Student 35). Based on these findings, it can be concluded that students found it useful and fun to use the AR application in learning geometry, and that the AR applications can be utilized in the process accordingly.

For the seventh question, the students were asked "Have you experienced any difficulties or problems while dealing with the "images of objects in different orientations" subject using AR activities?". A total of 36 of the students stated that they did not experience any difficulties, seven stated that they experienced definite difficulties, and 10 expressed that they experienced difficulties either sometimes or to some extent. The students whose opinions were coded as "Having definite difficulties in the process" stated that the difficulty stemmed from either the battery on the device dying or failure to get a proper image. Students whose opinions were coded as "Having difficulty either sometimes or to some extent while conducting the AR activities" provided responses like, "*I experienced some difficulties in drawing the objects*" (Student 7) and *"We didn't have much difficulty, but I got nervous only when I couldn't draw them"* (Student 25). It can be stated that in order to ensure more effective and smooth use of the AR applications, students' devices should be capable of supporting the AR applications, lighting and seating arrangements of the teaching environment should be such that they support the use of AR applications, and devices should be regularly checked to make sure they do not run out of charge during the class.

Students were lastly asked "What are other possible ways to facilitate your learning process in addressing the geometry subjects?". A total of 27 of the students stated that the AR applications were able to sufficiently handle geometry subjects, while two of the students suggested using a telephone, three suggested using concrete objects, three suggested using three-dimensional virtual objects and two suggested traditional

methods in terms of facilitating their learning process. In addition, 15 of the students stated that they had no idea. It can be recommended that, as an alternative to traditional methods, AR applications, mobile devices or computer applications containing three-dimensional virtual images should be used.

## Discussion, Conclusion and Recommendations

Today, with the technological advances that have been made, students expect active learning to be facilitated through a student-centered approach rather than a teacher-centered approach. The student model where students are expected to comprehend mathematics and geometry simply by listening to courses passively has been replaced with a student model where students want to learn by exploring and the focus is on keeping the students' interest in the course alive via a variety of instructional tools. Mobile devices are important tools for this latter student model, where students need to be exposed to diverse ways of learning and materials. The primary advantages of using mobile devices in teaching environments is that they are not only attractive but also effective. Precisely how AR, which is one of the latest technologies used in mobile devices for educational purposes, affects students' attitudes and serves to improve instructional skills and students' academic success has become a matter of interest for researchers (Guntur & Setyaningrum, 2021; İbili et al., 2020; Matcha & Rambli, 2013; Vázquez-Cano, Marín-Díaz, Oyarvide, & López-Meneses, 2020; Sarkar et al., 2020). In this study, the effect of AR activities on the improvement of students' spatial abilities was examined. Comparing the students' mean pre-test SAT scores with their mean post-test SAT scores, it was found that teaching with AR activities had a positive effect on the improvement of students' spatial abilities. This result is compatible with the results reported in the studies by Gecü-Parmaksız (2017), and Dünser, Steinbügl, Kaufmann, Steinbügl, and Glück (2006). In the former mentioned study, conducted with 72 pre-school children, AR applications were shown to have a positive effect on the children, while the latter mentioned study by Dünser et al. (2006), where the effect of AR applications on 215 high school students' spatial abilities was investigated, he AR applications were found to have positively influenced the improvement of the students' spatial abilities. The significant positive change in students' spatial abilities as a result of the use of AR could be attributed to the opportunities AR activities provide students to experience three-dimensional objects in three-dimensional virtual environments, as opposed to students learning them on two-dimensional surfaces. The results from the present study stood in contrast with those reported in the study conducted by Gün (2014) that involved 88 sixth-grade students. In Gün's study, no significant difference was found between the control group's post test scores and the experimental group's post test scores in terms of their spatial abilities and academic success. Considering these contradicting results, it can be said that more studies examining the effect of geometry teaching through AR activities on students' spatial abilities need to be conducted.

From the interviews with the students, it was discovered that many had never used the AR applications in their courses before. The students stated that the mathematics class conducted in this study was fun, and that such applications should be utilized more frequently and in different courses as well. It was concluded from the interviews that most of the students felt that the AR activities were both fun and useful. Moreover, they stated that they were able to really learn the "images of objects in different orientations" subject. The students further expressed that AR activities served as adequate means for learning geometry subjects, noting that they wanted to use the AR applications in other courses as well. From these responses, it was concluded that the students thought that in addition to being fun, the AR applications were also educative. Similarly, Abdüsselam and Karal (2012), Czerkawski and Berti (2021), Dünser et al. (2006), Gün (2014), Ibañez et al. (2020), İbili and Şahin (2013), Kim and Irizarry (2021) reached the conclusion in their studies that thanks to the AR applications, students' anxiety levels decreased, their learning was supported, they developed a positive attitude towards the classes, and their attention was strengthened. From the interviews with the students, it was determined that the most believed the AR applications to not have any disadvantages at all. The students

who did feel that AR had disadvantages cited the short-term battery life of the mobile devices and the possible distractibility, health problems, and classroom management problems caused by AR applications. Most of the students stated that the AR applications were supportive and useful applications for learning. From this finding, it can be argued that the AR applications provide students with an enriched learning experience and support for their learning. Similarly, in the studies conducted by Gün (2014), Ibañez et al., (2020), İbili and Şahin (2013), Karagozlu (2021), Sırakaya (2015), Sontay and Karamustafaoğlu (2021), Sudirman, Mellawaty, Yaniawati, and Indrawan (2020), and Timur and Özdemir (2018) it was concluded that participants believed that AG applications provided them an enriched learning environment experience, increased their interest in the class, better facilitated their learning of abstract concepts and provided a better understanding of the subjects.

At the end of the implementation of the AR activities in teaching the "images of objects in different orientations" subject, a statistically significant positive change was observed in the students' spatial abilities. Furthermore, the students expressed that the AR applications were useful and effective instructional tools, and that they should be applied far more often and in other courses as well. The fact that the AR applications served to improve students' spatial abilities is significant insofar as demonstrates that these applications can provide support to the students' learning. It was stated by the students that AR had further benefits as well, such as creating attractive learning environments that enable concretization and visualization. In this sense, it can be argued that the activities conducted with AR applications promote student engagement in the classroom and provide support to the students' learning process. The students also expressed that they were more willing to engage in the geometry class enhanced with AR activities, that the AG application made the learning environment more enjoyable, and that they hoped to benefit from such applications in other courses. These positive opinions towards geometry teaching with AR activities reveal that AR-enhanced environments create an enjoyable and participative learning experience, where virtual objects are incorporated into the real world and learning environments appropriate to the constructivist approach can be realized.

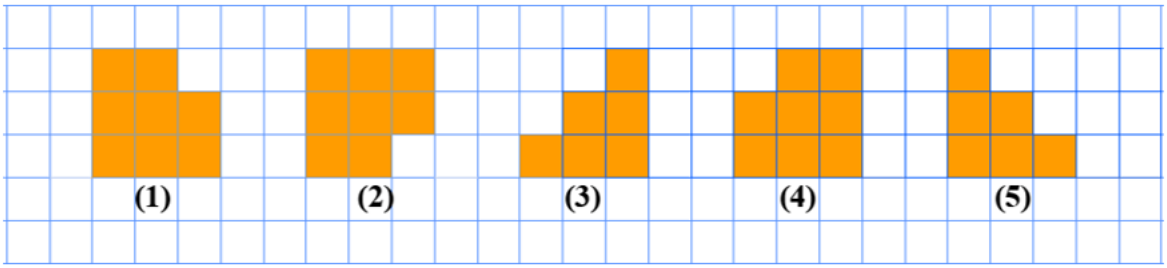
The primary limitation of this study was the absence of a control group. The inclusion of a control group in future research on this subject would help to determine whether the reason for the positive change observed in the variables used in the present study was due to the learning activities or not. In such a study involving a control group, a subject like the "images of objects in different orientations" would be taught to the control group via a traditional method and to the experimental group via AR activities. This study was conducted with only seventh-grade students. In future studies, the effect of teaching with the AR applications on different variables at different grade levels, from pre-school to high school, can be examined. In this study, the effect of using AR activities on teaching the "images of objects in different orientations" subject and on students' spatial abilities was examined. It is recommended that future studies investigate the effect of AR activities on different subjects in other courses as well as on different variables. In the present study, while developing the AR application, there were a few problems that emerged. First, the light in the classroom created a glare by directly reflecting on the target image, which in turn prevented the AR object from appearing on the phone screen; second, in group work, the students could not find enough space to rotate their smart phones, tablets and the target images; and lastly, the cameras and operating systems of the students' smartphones and tablets were not suitable for the optimal operation of the software. To avoid these issues, the target image should be covered with translucent material, students should be provided with enough space to carry out group work, and extra smartphones or tablets should be included in the teaching environment as spares in order to ensure that the AR activities can be properly carried out.

**Annex 1.** One of 10 activity sheets

## Activity – 1.b

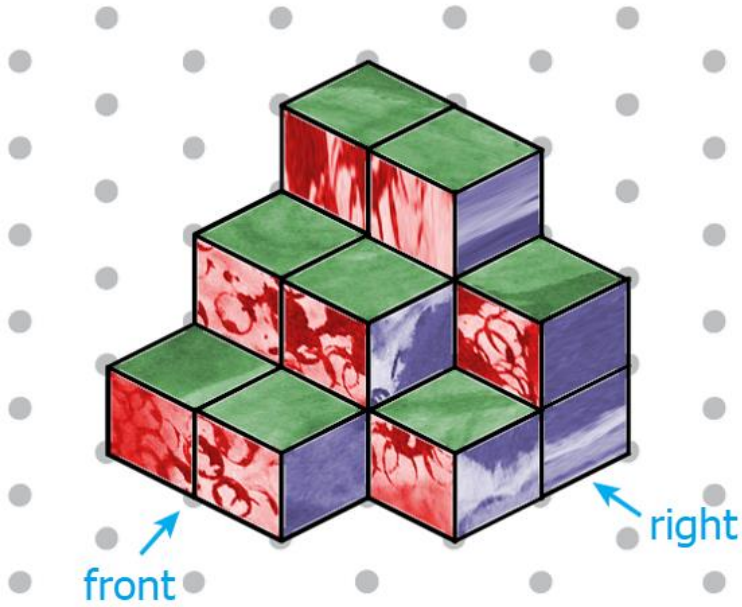
Open the Geo-Etkinlikler application on your phone or tablet, hold your phone or tablet on this activity's target image and examine the three-dimensional model on the screen.

Below there are views of the three-dimensional model you are examining. Match the numbered figures to the views of the model.




| | |
|---|---|
| (1) | a - Front view |
| (2) | b - Rear view |
| (3) | c - Top view |
| (4) | d - Right view |
| (5) | e - Left view |

**Target Image of the Activity – 1.b**



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International Online Journal of Educational Sciences

ISSN: 1309-2707

# The Effect of Psychoeducation Program on The Situation and Trait Anxiety Level of Mothers with A Child Diagnosed with Autism Spectrum Disorder (ASD)

*Research Article*

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**To cite this article:** Guler, M. (2021). The effect of psychoeducation program on the situation and trait anxiety level of mothers with a child diagnosed with autism spectrum disorder (ASD), *International Online Journal of Educational Sciences, 13*(5), 1343-1353.

ARTICLE INFO

*Article History*:

Received: 25.11.2020

Available online: 28.05.2021

ABSTRACT

This study aims to examine the effect of the psychoeducation program on reducing the state and trait anxiety levels of mothers with children with autism spectrum disorder (ASD). This research is a quasi-experimental study using the pre-test post-test control group design. The study group consists of 20 mothers, who have children with ASD diagnosis and whose children attending Konya / Selçuklu Autism Education Foundation (SOBE). The psychoeducation program was applied to the mothers in the experimental group for 8 weeks. No procedure was applied to the mothers in the control group. Spielberger State and Trait Anxiety Inventory (STAI) and personal information form developed by the researcher to collect some socio-demographic information were used as data collection tools in the study. The pretest and posttest scores of the mothers in the experimental and control groups were compared with the dependent and independent groups t-test. As a result of the analysis of the data, it was found that there was a significant difference between the state and trait anxiety pre-test and the post-test mean scores of the mothers in the experimental group. Based on this finding, it can be said that the psychoeducation program administered to mothers with children with ASD is effective in reducing mothers' anxiety levels. Based on this finding, it can be said that the psychoeducation program administered to mothers with children with ASD is effective in reducing mothers' anxiety levels. Considering the results of the study, this program, which is applied to mothers with children with ASD and determined to be effective in reducing their anxiety levels, can be applied by psychological counselors to mothers with similar characteristics.



**Keywords:**
Psychoeducation program, autism, mother, anxiety

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DOI: https://doi.org/10.15345/iojes.2021.05.004

## Introduction

Autism spectrum disorder (ASD) is a lifelong developmental disorder that typically occurs in early childhood, characterized by limitations and disorders in social interaction and communication, and stereotypic behavior patterns (American Psychiatric Association, 2013). In the 1980s, ASD prevalence was 4 per 10,000, but currently, it is increasingly common. Although there are no studies on the prevalence of ASD in Turkey (Karakoç Demirkaya, 2019), one of 68 children in the United States are reported to be diagnosed with ASD (Baio, 2014). With this rapid increase in the prevalence of ASD, the number of parents who have problems with having a child with ASD also increases.

For parents, the diagnosis of ASD in their children is one of the most important events in their lives (Guralnick, Hammond, Neville & Connor, 2008). Parents of children diagnosed with ASD are likely to experience anger, depression, and anxiety shortly after the diagnosis (Benson & Karlof, 2009). After learning that they have children with ASD, they have to change their lives in many ways. Relationships with family and friends, daily routines, hopes, and dreams for the future are changing (Dale, Jahoda & Knott, 2006). Self-control, communication, behavioral problems, need for constant care, and supervision of a child diagnosed with ASD cause parents to experience intense stress, anxiety, and health problems (Ludlow, Skelly & Rohleder, 2012). The results of the studies have revealed that parents with children with ASD have more stress, anxiety, and depression than parents with children with normal development (Bitsika & Sharpley, 2004; Hasandayıoğlu, 2020; Hayes & Watson, 2013; Jones, Totsika, Hastings & Petalas, 2013; Wolf, Noh, Fisman & Speechley, 1989). Most parents, who have children with ASD, are concerned that they think they are not doing everything possible to help their children (Lutz, Patterson & Klein, 2012). Besides, parents of children with ASD have concerns about the future life of their children. The issues of who will take care of the child in the future, his/her safety, and whether he/she will gain independence are the areas that parents experience anxiety (Dabrowska & Pisula, 2010; Jones et al., 2013; Lutz et al., 2012).

According to Spielberger (1972), anxiety is defined as unpleasant emotional and observable reactions such as sadness and tension caused by stressful situations and is divided into state and trait anxiety (Büyüköztürk, 1997). Situational anxiety is an emotional reaction that occurs as a result of people's interpretation of events as threatening depending on the temporary situation created by dangerous conditions. Its severity and duration, which are mostly due to realistic reasons, are dependent on the interpretation of the perceived threat. In cases of intense stress, the level of state anxiety increases, and when the stress is removed, it decreases. When the level of anxiety increases, physiological changes such as sweating, flushing, and trembling may occur (Öner & Le Compte, 1983). Trait anxiety is a person's tendency to perceive and interpret an event or situation as dangerous and self-threatening which is neutral according to objective criteria. People who experience trait anxiety have characteristics such as restlessness, being easily hurt, dissatisfaction with their environment, and thinking as if bad things will happen to them. People who experience trait anxiety intensely may experience state anxiety more frequently and intensely and easily fall into pessimism. Increasing the intensity of anxiety disrupts behavior and causes perception and attention disorders. Besides, since the person experiencing intense anxiety, directs his / her behavior to get away from the situation that causes anxiety, the person cannot perceive the options around him and this situation causes mental tension and uneasiness (Öner & Le Compte, 1983; Özusta, 1995). The intense anxiety of parents with disabled children makes their communication with the child and their own lives difficult (Yavuzer, 1994).

Mothers are the people who take care of the child, take great care of the child and take more active roles in the family than fathers (Arslan, Hamarta & Deniz, 2002; Brown, Macadam-Crisp, Wang & Iarocci, 2006). A disabled child affects mothers more, and it is difficult and tiring for mothers to meet the needs of children diagnosed with ASD such as self-care, protection, supervision, and close attention. Mothers are the most affected by the burden of care in the family. Mothers who have to cope with more difficulties can deteriorate

mental health from time to time (Kılıç, 2009). Mothers with children diagnosed with ASD experience more anxiety than mothers of normally developing children ( Neil, White, Warren & Pellicano, 2019). Also, it was reported that depression, state, and trait anxiety scores of mothers were higher than the scores of fathers ( Deniz, Dilmaç & Arıcak, 2009; Fırat, 2016). Considering the daily care work undertaken by the mother, emotional difficulties, and care burden, it can be said that mothers need more support than fathers.

Some support is provided in the form of educational support, marriage and family counseling, individual or group intervention programs, and counseling services for mothers and fathers with children diagnosed with ASD (Perry, 2004). The psychoeducation group, one of these supports, mostly focuses on cognitive styles, skill development, and goal-reaching strategies. (DeLucia-Waack, 2006). Although psychoeducational groups are not considered as therapy, they provide therapeutic benefits (Brown, 2013). In these groups, which are created for the subjects within the cognitive-behavioral field, the symptoms that cause stress are tried to be reduced by increasing the coping skills (Karakaya & Öztop, 2013). In Turkey in the last 20 years, the results of the content analysis of the articles studied children, adolescents, adults, and the elderly it was determined that the applied methods and techniques of cognitive-behavioral therapy approach are effective on individuals (Bengisoy, Özdemir, Erkıvanç, Şahin & İskifoğlu, 2019). In this study, the principles, methods, and techniques of cognitive-behavioral therapy were used to reduce the anxiety levels of mothers with children with ASD in the psychoeducation group.

In the classical parental roles of today's society, the mother has to cope with more difficulties, as the responsibility of the child's care is dependent on the mother (Seligman & Darling, 2007). The high level of state and trait anxiety experienced by mothers with children diagnosed with ASD poses a risk to their mental health and may negatively affect their relations with their spouses and children. Both mothers and fathers with children diagnosed with autism need support due to the stressful situations they experience and difficulties in adapting to life changes. Supports offered in different formats are beneficial for parents (Guralnick et al., 2008). Guidance and counseling services in Turkey within the scope of the services to be provided for parents with ASD children, psychoeducation programs are needed to reduce the level of anxiety. Besides, it is thought that the results obtained from this study will help to develop guidance and psychological counseling services for mothers with children with ASD diagnosis and contribute to new studies.

In line with the explanations made so far, the purpose of this study is to examine the effect of the psychoeducation program on reducing the state and trait anxiety levels of mothers with children with ASD.

## Method

This research is a quasi-experimental study using the pre-test post-test control group design. In this research design, participants are randomly assigned to two groups. One of these groups is the experimental group that is treated experimentally, and the other is the control group, which is not treated experimentally. Before the intervention, both groups are pre-tested. One of the most important reasons for the pretest application is that the pretest results can be used to reduce the diversity in the dependent variable. In this way, powerful statistical tests can be performed (Heppner, Wampold & Kivlighan, 2008). After the intervention, a post-test is applied to the experimental and control groups. This pattern is strong in terms of internal validity thanks to the random method (Christensen, Johnson & Turner, 2015).

### Data Collection Instruments

The Spielberger State and Trait Anxiety Inventory (STAI) and the personal information form developed by the researcher to collect some socio-demographic information were applied to the mothers with disabled children.

**State-Trait Anxiety Scale:** The State-Trait Anxiety Scale, developed by Speilberger et al. (1970), is a scale adapted into Turkish by Öner and Le Compte (1983), consisting of short sentences and based on self-assessment. The scale consists of two sub-units, TX-1 and TX-2, each containing 20 sentences and measuring trait and state anxiety separately. The emotions or behaviors expressed in the State Anxiety Scale items are answered by marking one of the options such as (1) none, (2) some, (3) mostly, and (4) always, depending on the level of feeling in the situation. Emotions and characteristics expressed in trait anxiety items are answered as (1) never, (2) sometimes, (3) often, and (4) always. Reliability coefficients determined by Alpha correlations, which is a generalized form of Kuder-Richardson 20 formula, were found between 0.83 and 0.87 for the "Trait Anxiety Scale" and between 0.94 and 0.96 for the "State Anxiety Scale". The State and Trait Anxiety Scale was translated into Turkish with the help of two different techniques: experimental concept validity and criterion validity (Öner & Le Compte, 1983).

**Personal Information Form:** This form, which was developed by the researchers, contains information about the child's disability type, age, profession, education level, and marriage duration variables of the mothers.

**Participants**

This study was carried out on 20 mothers whose children attend Konya / Selçuklu Autistic Individuals Education Foundation (SOBE) and who have children with ASD diagnosis. 3 (15.00%) of the mothers who voluntarily accepted to participate in the study were university graduates, 9 (45.00) high school, 4 (20.00) middle school, and 4 (20.00) primary school graduates. When the mothers in the study group were evaluated in terms of the age variable, there were 5 (25.00%) mothers between the ages of 20-30, 5 (25.00%) between the ages of 31-40, and 10 (50.00%) between the ages of 41-50. According to the duration of marriage variable, 6 of the mothers (30.00%) 6-10 years, 4 (20.00%) 11-15 years, 3 (15.00%) 16-20 years 6 (30%) 21 -25 years, 1 (5%) has been married for more than 25 years. Three of the mothers (15.00%) have a single child, 7 (35.00%) two children, and 10 (50.00%) have three children.

**Application**

Written permission was obtained from the Konya / Selçuklu Education Foundation for Individuals with Autism (SOBE) to carry out the research. In the selection of the mothers in the study group, having a child diagnosed with ASD between the ages of 3-18 were determined as criteria. The informed consent form prepared for their voluntary participation in the study was signed by the mothers with children diagnosed with autism. As a result of the screening studies, 10 mothers were assigned to the experimental group and 10 mothers to the control group by random method from 20 mothers. The psychoeducation program was held between 01 April-20 May 2019 in the Selçuklu Education Foundation for Individuals with Autism (SOBE) seminar hall. No procedure was applied to the control group, and the mothers in the experimental group received a psychoeducation program for approximately 90 minutes, once a week for 8 weeks.

In this study, the psychoeducation program, which was prepared based on the cognitive behavioral therapy approach to reduce the state and trait anxiety levels of mothers in the experimental group, consists of 8 sessions. The program generally consists of information and guidance, learning relaxation and breathing exercises, providing behavioral and cognitive changes that mothers need, and discussing life events resulting from having a child with ASD. The psychoeducation program was created by the researcher. The opinions of experts in the field of Guidance and Psychological Counseling were sought while developing the program. During the implementation of the psychoeducation program, activities were carried out in line with the purposes of the sessions, and cognitive behavioral therapy techniques such as recording dysfunctional thoughts, relaxation exercises, homework, and role-playing were used.

The goals aimed to be gained to mothers in the psychoeducation group are as follows, in the order of the session.

In the first session; to be able to meet mothers and inform them about the program to be implemented.

In the second session; learning the characteristics of autism spectrum disorder (ASD) and realizing the effects of having a child diagnosed with ASD on the lives of mothers.

In the third session; being able to recognize and accept the emotions experienced by mothers, to enable them to have information about anxiety; being able to take control of their lives.

In the fourth session; the ability of mothers to realize the effects of negative emotions and thoughts and anxiety on their lives, to learn the causes of anxiety, its negative effects, and reactions to anxiety.

In the fifth session; being able to control anxiety and learn the relationship between emotion, thought, and behavior.

In the sixth session; learning the ways to cope with anxiety, breathing and relaxation exercises.

In the seventh session; to enable mothers to help their children to be more satisfied with their lives despite the disability and limitations.

Finally, in the eighth session; the general evaluation of the program, to share the program's gains with the mothers.

No procedure was applied to the mothers in the control group.

**Data Analysis**

The Shapiro-Wilk test was used to determine whether the data were normally distributed, and the Levene test to test the homogeneity of variances. Since the data obtained as a result of the analysis showed normal distribution, parametric tests were used. The independent samples t-test was used to determine whether there was a difference between the pretest and posttest scores of the mothers in the experimental and control groups. According to the t-test assumptions for independent samples, the variances of the two groups in their population are approximately equal. The dependent variable is at least in the range or ratio scale, and the two groups are independent of each other. (Büyüköztürk, 2015). The pre-test total scores and post-test total scores of the fathers in the experimental group were compared with the paired samples t-test. The prerequisite of the paired samples t-test is that the scores of the dependent variable are at least equal intervals and that the scores of the two related measurement sets show normal distribution (Büyüköztürk, 2014). SPSS 16.0 package program was used to analyze the data obtained from the research.

## Findings

To determine whether the mothers with children diagnosed with ASD in the experimental and control groups were equivalent to each other in terms of state and trait anxiety scores, independent samples t-test was applied. Analyzes for these tests are shown in Table 1.

**Table 1.** T-Test Results Applied to the State and Trait Anxiety Pre-test Total Scores of Mothers with Children with ASD in the Experimental and Control Groups

| Dependent Variable | Groups | n | $\bar{X}$ | Ss | t | p |
|---|---|---|---|---|---|---|
| State Anxiety | Experiment Group | 10 | 42.90 | 8.06 | -.239 | .814 |
| | Control Group | 10 | 43.70 | 6.88 | | |
| Trait Anxiety | Experiment Group | 10 | 47.30 | 5.61 | -.174 | .864 |
| | Control Group | 10 | 47.70 | 4.59 | | |

According to Table 1, as a result of the t-test conducted to determine whether there is a difference between the State and Trait Anxiety pretest scores of the mothers with children with ASD in the experimental and control groups, it was determined that there was no significant difference between the experimental and control groups. (State anxiety: t =-.239; p> 0.05. Trait anxiety: t =-.174; p> .05).

Table 2 shows the paired samples t-test results applied to the state and trait anxiety pre-test total scores and the post-test total scores of mothers with children diagnosed with ASD in the experimental group.

**Table 2.** T-Test Results Applied to the Total Scores of State and Trait Anxiety Pre-test / Post-test of Mothers with Children with ASD in the Experimental Group

| Dependent Variable | Test | n | $\overline{X}$ | Ss | t | p |
|---|---|---|---|---|---|---|
| State Anxiety | Pre-test | 10 | 42.90 | 8.06 | 2.516 | .033 |
| | Post-test | 10 | 36.60 | 5.85 | | |
| Trait Anxiety | Pre-test | 10 | 47.30 | 5.61 | 4.298 | .002 |
| | Post-test | 10 | 43.00 | 6.18 | | |

When Table 2 is examined, the State Anxiety pretest mean score of the mothers with a child with ASD in the experimental group is $\overline{X}$ = 42.90, and the State Anxiety posttest mean score is $\overline{X}$ = 36.60. The posttest mean scores of the mothers in the experimental group were found to be significantly lower than the pretest total mean scores (t = 2.516; p <.05).

The trait anxiety pre-test mean scores of the mothers with children diagnosed with ASD in the experimental group are $\overline{X}$ = 47.30, and the trait anxiety post-test mean score is $\overline{X}$ = 43.00. The posttest mean scores of the mothers in the experimental group were found to be significantly lower than the pretest total mean scores (t = 4.298; p <.05).

Table 3 shows the results of the independent samples t-test regarding the state and trait anxiety post-test mean scores of the mothers with children diagnosed with ASD in the experimental group and the state and trait anxiety post-test mean scores of the mothers in the control group.

**Table 3.** T-Test Results Applied to the State and Trait Anxiety Post-test Scores of Mothers with Children with ASD in the Experimental and Control Groups

| Dependent Variable | Groups | n | $\overline{X}$ | Ss | t | p |
|---|---|---|---|---|---|---|
| State Anxiety | Experiment Group | 10 | 36.60 | 5.85 | -2.52 | .021 |
| | Control Group | 10 | 42.40 | 4.32 | | |
| Trait Anxiety | Experiment Group | 10 | 43.00 | 6.18 | -2.29 | .034 |
| | Control Group | 10 | 48.90 | 5.27 | | |

According to Table 3, the State Anxiety post-test mean score of mothers with a child diagnosed with ASD in the experimental group is $\overline{X}$ = 36.60, and the state anxiety post-test mean score of the mothers in the control group is $\overline{X}$ = 42.40. The posttest mean scores of the mothers in the experimental group were found to be significantly lower than the posttest mean scores of the mothers in the control group (t = -2.52; p <.05).

The trait anxiety post-test mean score of the mothers with children diagnosed with ASD in the experimental group is $\overline{X}$ = 43.00, the trait anxiety post-test mean score of the mothers in the control group is $\overline{X}$ = 48.90. The post-test mean scores of the mothers in the experimental group were found to be significantly lower than the post-test mean scores of the mothers in the control group (t =-2.29; p <.05).

The state and trait anxiety pre-test total scores and the post-test total scores of the mothers with children with ASD in the control group are shown in Table 4.

**Table 4.** T-Test Results Applied to the State and Trait Anxiety Pre-test / Post-test Total Scores of Mothers with Children with ASD in the Control Group

| Dependent Variable | Test | n | $\bar{X}$ | Ss | t | p |
|---|---|---|---|---|---|---|
| State Anxiety | Pre-test | 10 | 43.70 | 6.88 | .904 | .390 |
| | Post-test | 10 | 42.40 | 4.32 | | |
| Trait Anxiety | Pre-test | 10 | 47.70 | 4.59 | -1.164 | .274 |
| | Post-test | 10 | 48.90 | 5.27 | | |

When Table 4 is examined, the state anxiety pre-test mean scores of the mothers with children diagnosed with ASD in the control group are $\bar{X}$ = 43.70, the state anxiety posttest mean score is $\bar{X}$ = 42.40. There is no significant difference between the post-test mean scores and pretest mean scores of the mothers in the control group (t = .904; p> .05).

The trait anxiety pre-test mean score of the mothers with ASD diagnosis in the control group is $\bar{X}$= 47.70, the trait anxiety post-test mean score is $\bar{X}$ = 48.90. There is no significant difference between the mothers' pre-test mean scores and the post-test total score averages (t =-1.164; p> .05).

**Discussion and Conclusion**

In this study, it was aimed to determine the effect of an 8-session psychoeducation program applied to mothers with children with ASD on state and trait anxiety. According to the findings obtained from the study, it was found that there was a significant difference between the state and trait anxiety pre-test scores of the mothers in the experimental group and the average scores they got from the post-test. Based on this finding, it can be said that the psychoeducation program administered to mothers with children with ASD is effective in reducing mothers' anxiety levels. Similar to the findings of this study, there are research findings that reveal that intervention programs such as group psychological counseling, support group, and psychoeducation for mothers with children with autism are effective in reducing stress, anxiety, and depression levels in the literature (Alaedein & Al-Sharaa, 2020; Banach, Iudice, Conway & Couse, 2010; Kaya & Yöndem, 2020). There are also research results showing that intervention studies conducted to reduce the anxiety levels of parents with children from different types of disabilities other than ASD are effective (Arıdağ & Erbiçer, 2018; Cin ve Kılıç, 2005; Dilmaç, Çakılı, Koçak & Çalılçı, 2009). The results of this study are similar to the results of the research that interventions to reduce parents' anxiety levels with a disabled child are effective.

Both mothers and fathers with children diagnosed with ASD need support because of the stressful situations they experience and difficulties in adapting to life changes. (Guralnick et al., 2008; Bitsika & Sharpley, 1999) found that the most important needs of parents are acceptance and support from others as a result of a study conducted on 14 parents with children with ASD. Supports provided by relatives, experts, or institutions help both to facilitate the adaptation of parents (Nealy et al., 2012; Ünlüer, 2009) and to reduce their anxiety levels (Baltaş 2008). Supports provided in different forms are beneficial (Guralnick et al., 2008). Banach et al. (2010) stated that the support group for parents with children with ASD positively affected their self-efficacy levels and increased their coping skills. Kulbaş (2015) stated that group counseling increased the self-efficacy of mothers with children with ASD and decreased their hopelessness levels. Similarly, in this study, it can be said that the intervention aimed at reducing the anxiety levels of mothers helped to meet the needs of mothers for acceptance and support from other individuals.

One of the possible variables that can explain the decrease in state and trait anxiety levels of mothers in the experimental group is group factors. Group support can give parents the knowledge, understanding, and acceptance by others (Woodgate, Ateah & Secco, 2008) and provides the initiation of change (Yalom, 2002). Mothers with a child with disabilities need to build close relationships with other mothers, share their experiences, and know that they are not alone (Sucuoğlu, 2009). It has been determined that mothers who

share their lives, supported by the people around them, think that the problems are not unique to them and can solve the problems they experience more easily (Ceylan, 2004). Besides, mothers knowing that they have someone to share their feelings and thoughts with, who they can trust, and providing relief as a result of sharing can help on solving problems. The common features that increase the commitment of mothers in the experimental group help mothers to be more willing to open themselves and to decrease the feelings of loneliness and alienation (Brown, 2013). Based on the feedback expressed by the mothers in the evaluation session, it can be said that the homogeneity of the group in terms of gender and the low number of mothers in the group enabled the mothers to share their feelings and thoughts in a comfortable and detailed manner. Besides, it can be said that mothers considering the mothers in the group as themselves makes them feel safe, understand, and encourage other members better. It is thought that characteristics such as sharing feelings and thoughts of mothers with children with ASD who participate in group life, being understood by group members, being able to support others, and knowing that they are not alone are effective in reducing their anxiety levels.

Considering the results of the study, this program, which is applied to mothers with children with ASD and determined to be effective in reducing their anxiety levels, can be applied by psychological counselors to mothers with similar characteristics. Comparisons can be made with the results obtained by applying it to fathers who have children with ASD. Also, it is thought that it will be beneficial to prepare new programs and to conduct group work in which parents participate together.

The experimental group of this study is limited to 20 mothers, who have a child diagnosed with ASD and whose children are attending Konya / Selçuklu Autistic Individuals Education Foundation (SOBE). For this reason, it is thought that it would be beneficial to apply the program for groups consisting of mothers with different numbers and mothers with different types of disabilities other than ASD.

In addition to psychoeducation group work; relaxation training, conflict resolution, coping with stress, problem-solving, social support, etc., as well as anxiety may be offered to mothers with disabled children via individual and group counseling, family counseling, individual and group guidance.

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International Online Journal of Educational Sciences

ISSN: 1309-2707

# Vocational College Students' Opinions on Foreign Language Courses' Content Relevance and Sufficiency of Instruction Hours

*Research Article*

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**To cite this article:** Tezel, K. V., & Ovdur Ugurlu, Z. (2021). Vocational college students' opinions on foreign language courses' content relevance and sufficiency of instruction hours**,** *International Online Journal of Educational Sciences, 13*(5), 1354-1369.

ARTICLE INFO

*Article History*:

Received: 29.12.2020

Available online: 01.11.2021

ABSTRACT

Teaching English continues to be one of the problematic areas at all levels of education in Turkey, from primary schools to universities. Even though there are studies evaluating the state of English language teaching in Turkish universities, there is no study that investigates the effectiveness of English education in vocational schools. The aim of this study is to contribute to the lack of knowledge with regard to teaching English in vocational schools by obtaining students' opinions in two vocational schools at a state university in the Black Sea region of Turkey. To that end, data were collected in the 2016-2017 academic year to obtain the opinions of students about the relevance of the content of the compulsory English courses, their contribution to the students' personal and future professional lives, and the sufficiency of the number of weekly English course hours in their schools. Semi-structured interviews and document analysis were used to capture rich data. The interview data were transcribed and analyzed to elicit the opinions of the students on the issues.



**Keywords:**
Vocational school, foreign language teaching, teaching English, compulsory English course

## Introduction

In a rapidly advancing world in which distances are shrinking and contact among individuals is increasing through technological means that allow synchronic communication regardless of distances and time differences, English has become the language of choice for international communication on a global scale and has now become the lingua franca which Seidlehofer (2001) aptly defines as:

"an additionally acquired language system that serves as a means of communication between speakers of different first languages, or a language by means of which the members of different speech communities

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DOI: https://doi.org/10.15345/iojes.2021.05.005

can communicate with each other but which is not the native language of either – a language which has no native speakers". (p.146)

Having become the lingua franca of today's world, English is taught, used, and learned in a variety of settings as a second language (ESL) or as a foreign language (EFL). It is also used as the medium of instruction at the tertiary level in some universities in various countries, Türkiye being one of them. As Smith (2010) points out: "English as a lingua franca (ELF) as language of tertiary education amongst multilinguals in non-English-speaking areas seems to be here to stay." (p.3)

The use of English as the language of international communication has reached such a level that the number of the non-native speakers has surpassed the number of the native speakers of all dialects of English. In a British Council research study, Robson (2013, p. 4) predicted that by 2020 the number of people actively learning English around the world was going to be 2 billion people. In addition to this sizeable number of people investing time and effort to learn English, there appears no alternative language to replace English in the foreseeable future either. As no other language is a likely challenger, all countries have been incorporating English as the foreign language to teach in their curricula at all levels. Türkiye is one of those countries. Teaching English starts in the second grade of elementary school in the Turkish state school system. A student studying in a Turkish state school starts taking English courses beginning in the second year of elementary school and continues learning until the end of his university education. However, the issue of how much distance Turkish students cover in their journeys of learning English has been one of the most debated topics for a long time.

Current issues in English language teaching in Türkiye have been discussed in conferences, seminars, articles, or postgraduate dissertations. In an early study, Develioğlu (1987) discussed problems in foreign language teaching in Turkish schools and solutions; he surveyed sixty different schools and six language courses in order to get a picture of the state of foreign language teaching in that era. The problems he identified were crowded classes, lack of useful materials and equipment, insufficient programs and methods, multi-level students in classes, unmotivated students, and underqualified teachers. Those were the issues in foreign language teaching at the time and it would not be plausible to claim that much has changed since then.

A report published 24 years later did not present an improved picture either despite the time that has elapsed since the previous report. In that report, Koru and Akesson (2011) discussed the issues related to English teaching in the state school system and listed insufficient number of hours, beginning age to learning English, amount of fiscal allocation for the teaching of English which results in lesser income for teachers, low quality textbooks, and limited number of out-of-class English activities. In a recent study, Demirpolat (2015) identified problems in six areas which were problems related to the education of prospective foreign language teachers, employment of foreign language teachers, physical conditions of schools, foreign language teaching materials, methodology, and the management and supervision in foreign language teaching.

The dismalness of the state of affairs is not different when it comes to teaching English in higher education institutions as the overwhelming majority of the students who attend universities are the products of the English education in the state school system. Based on the results of a survey at international, national, institutional, and departmental levels, West (2015) in a British Council report summarizes the current situation in Turkish universities succinctly:

"It is evident that the root cause of Turkey's 'English deficit' is the problems in the school system and these will take a generation to rectify. In the meantime, universities have little choice but to operate with an intake whose English level is 'rudimentary – even after 1,000+ hours (estimated at end of Grade 12) of English classes'". (p. 115)

It is underlined in that report that it would be virtually impossible to help students in university preparatory schools to achieve the target B2 level English proficiency in one year of intensive English classes. In the report, it is recommended that the English curricula be revised and English courses at universities be reorganized to alleviate and solve the existing problems. It is evident that there are serious problems in foreign language teaching in Türkiye. Immediate attention is essential to address the lingering issues because, in the 2020 English Proficiency Index (EPI), Türkiye is ranked 69 among 100 countries with an EPI score of 465 which indicates low language proficiency.

**Review of Literature**

As English is the primary foreign language taught in Turkish schools, efforts are constantly made by the Ministry of National Education to improve the quality of English education in the school system. In accord with such efforts, in the latest curricula, the Board of Education and Discipline (TTKB) (2018a, p.95) announced the weekly English course hours to be two hours for the 2nd, 3rd, and 4th grades of primary school, three hours for the 5th and 6th grades of secondary school, and four hours for the 7th and 8th grades of secondary school. For the new high school curricula, the TTKB (2018b, p. 67) announced the number of weekly English hours to be four hours for the 9th, 10th, 11th, and 12th grades of high school. In short, a high school graduate student learns English as a foreign language for eleven consecutive years. If a student chooses to attend a university, he either continues to learn English intensively in the preparatory English program for one year which is a considerable addition to the large amount of time already spent on learning English, or in the required English courses in his department in addition to his learning of the language in the previous eleven years. However, despite the time and effort spent to teach English, various problems persist in the teaching and learning process as will be illustrated below.

The existing studies in the professional literature identify the problems in English language teaching in universities from the perspectives of instructors, students, and administrators and focus on the English courses in four-year faculties of various universities (Gülmez, 1982; Ceyhan, 1982; Tümer, 1986; Kaçmaz, 1992; Tayhani, 1993; Gömleksiz, 1993; Gökdemir, 1998; Gömleksiz, 2002; Çakıcı, 2007; Çakır, 2007; Kayrak, 2010; Tok, 2010, Güneş, 2011). The dates of those studies show that English teaching has been a matter of investigation for almost four decades. Although those studies were conducted in different universities, a quick overview would show that their results are strikingly similar. The results of all these studies may be summarized as follows:

- Both students and teachers think that teaching English as a foreign language in universities is not successful.
- There is no awareness of specific goals and main objectives of the curriculum.
- Curricula are designed without conducting effective needs analyses; as instruction does not satisfy actual student needs, problems and dissatisfaction are experienced during the learning/teaching process.
- Students and teachers believe that current implementations with regard to English language teaching are not satisfactory, especially, in terms of methodology, approach, techniques, and in-class practices.
- Although students find it essential to learn English as a foreign language, the English instruction they have been receiving does discourage them.

These statements summarize the state of teaching English as a foreign language in four-year faculties and the opinions of the students and the instructors in them. Although English language teaching in four-year higher education institutions is widely discussed in different studies and professional meetings, vocational

schools have not been a part of those endeavors. According to the Higher Education Council (henceforth, YÖK) (2019), on the other hand, there are 3.002.964 registered students in the associate programs of two-year vocational schools. This is a sizeable number. However, the English learning experiences of vocational school students have not been investigated in any research study so far.

In the available literature, there are only three studies that include vocational schools in terms of teaching English. In the first one, Çakıcı (2007) aimed to determine the attitudes of vocational school students towards the compulsory English courses. As could be predicted, the students in her study displayed negative attitudes towards those compulsory courses. The second one by Ulu, Kademli, and Hastürk (2008) focused on the coursebooks used in the compulsory English courses at vocational schools and examined how useful they were in terms of the students' actual proficiency levels. The authors drew attention to the problems in coursebooks as they stated that coursebooks placed emphasis only on the grammatical features of the language, and that was the reason why students were not able to develop speaking skills. The third one by Aksoy & Aksu (2019) examined the attitudes of learners in the Gendarmerie Non-Commissioned Officers Vocational College. Their results showed that the attitudes of the participants towards the compulsory English course were moderately negative.

Two of those studies investigate the attitudes of students and one focuses on textbooks. Attitude refers to opinions, feelings, or behaviors people may display as a reaction to what they have experienced. Therefore, a study that focuses on the factors that lead students to display negative attitudes towards English teaching which is a subject undisputedly considered essential by everyone is worth undertaking. Even though the perceptions of vocational school students regarding English instruction have been a focus of research in some countries in the world (Zinan & Sai, 2017; Cheng, 2015), in Türkiye, there is no study that has investigated the opinions of vocational school students regarding the effectiveness of the English courses they have to take and the contribution of those courses to the students' personal and professional lives. The opinions of students provide invaluable information about the effectiveness of instruction as they are shaped by the instruction they receive. It is obvious that there is a void in the professional literature on this issue. To fill this void, this study was designed to contribute to the lack of knowledge by obtaining the opinions of students who are the direct recipients of the English education given. It aims to shed a light on the issue from the perspectives of vocational school students who are the true insiders.

**Purpose of the study**

This study was designed to obtain vocational school students' opinions about the relevance of the content of the compulsory English courses, the contribution of those courses to the students' personal and future professional lives, and the sufficiency of the number of English instruction hours in their schools. Thus, it was conducted to provide answers to the following questions:

1. What are the opinions of the students about the relevance of the content of compulsory English courses in their schools?
2. What are the opinions of the students about the contribution of the compulsory English courses to their personal and future professional lives?
3. What are the opinions of the students about the sufficiency of the number of hours of the compulsory English courses in their schools?

## Method

**Research Design**

This study is qualitative by design. Qualitative research design provides researchers and readers with rich and detailed data, which makes it possible to understand the underlying factors in a situation. Flick (2007)

points out that qualitative research provides the researcher with the means to find out and define social phenomena "from the inside". To obtain answers to the research questions, semi-structured interviews were conducted during data collection to capture the opinions of the students who were the true insiders.

**Participants**

The participants were freshmen students in two vocational schools at a state university. Two criteria were considered in the selection of the participants: how the participants would be selected and how many students would be included in the sample. In this study, purposeful sampling strategy was used because the key considerations in using this strategy are that the selection of the participants is directly in relation with the researcher's intention and the standard is whether the informants are information-rich or not (Creswell, 2012). The latter point is also related to determining the number of the participants to be included in the group so that rich data can be obtained. In that regard, Patton (2002) states:

"There are no rules for sample size in qualitative inquiry. Sample size depends on what you want to know, the purpose of the inquiry, what's at stake, what will be useful, what will have credibility, and what can be done with available time and resources. (p. 244)"

As to determining the number of participants, Guest, Bunce, and Johnson (2006) remark that when a researcher reaches a point where he cannot obtain any additional insights from the participants, that means that enough data have been collected. This phenomenon is called "saturation." It occurs when the data collected from different individuals repeat itself and overlap, and that implies not only the end of sampling but data collection as well. Guest, Bunce, and Johnson (2006) also state that saturation often occurs around 12 participants in homogeneous groups.

In accord with the suggestions made about the number of participants in the sample in a homogenous group, the researchers initially decided to include twelve participants in the sample. Voluntary participation was encouraged. There were sixteen students in the sample when the researchers decided to terminate data collection as the findings had become repetitive. Eight of those students were in the department of Electronic Communication (EC) and eight were in the department of Social Security (SS). In order to conceal their identities to ensure anonymity, the students in both groups were coded using the initial letters of their departments followed by numbers 1-8. Thus, the students in the EC department were coded as EC1, EC2, EC3, EC4, EC5, EC6, EC7, and EC8. The same was done for the students in the SS group who were coded as SS1, SS2, SS3, SS4, SS5, SS6, SS7, and SS8.

**Data collection and analysis**

In this study, the primary method of data collection was semi-structured interviews, and they were used to capture the participating students' opinions about the issues related to English teaching in vocational schools. The interview questions were formulated to seek answers to the research questions of the study, and the participants answered those questions based on their experiences in the English courses they took in the vocational school they attended. The questions were:

1. *Is the content of the English courses relevant to help you improve your English?*
2. *Do the English courses contribute to your personal and future professional life?*
3. *Do you find the number of weekly English course hours in your school sufficient?*

In order to obtain rich data during the interviews, the participating students in the EC and SS departments were further placed in *successful*, *average*, and *weak* subgroups, based on their academic achievement in the English courses. The grading criteria of their university were referred to in the placement process. To obtain the students' grades, document analysis which is another qualitative research method used

in examining and interpreting data (Bowen, 2009) was utilized. The purpose of this further grouping was to determine overlaps and divergences of opinion among the student groups with different academic achievement levels regarding the English instruction they received.

The interview recordings were transcribed prior to analysis. Following the suggestions made by Cresswell (2012), the data were coded in order to establish the codes of meaning, and the codes were grouped into themes or categories. To ensure the accuracy of the findings, *data triangulation* and *investigator triangulation* were used. To achieve the first type, the participants were put into two main groups based on the departments they were attending. They were further placed into three subgroups as successful, average, and weak based on their academic performance in the English courses. Therefore, data triangulation which consists of collecting data from different individuals (Creswell, 2012) was done. Investigator triangulation, which is the second type of triangulation, was also used for validity purposes; to that end, a field expert was asked to read, cross-examine and report on the problems that may have occurred in the data and findings.

## Findings

The presentation of the results will start with the opinions of the successful subgroup. This will be followed by the opinions of the average and weak subgroups successively. For each subgroup, the opinions expressed by the majority of the students will be presented first. In other words, the opinions will be presented from the most common to the least common.

### Research question 1: Relevance of the content of the compulsory English courses in college

#### The successful subgroup

The general opinion regarding the content of the English courses in the successful group was negative. None of the students found the content of the compulsory English courses relevant. Regarding their dissatisfaction, the students stated two reasons: they were unable to make sentences by themselves even at college level and the content was repetitive of what they had previously learned.

Four students in the group stated that the content of the English courses in college mostly included the teaching of vocabulary and grammar and memorization of those items. The students complained that they were not taught how to use those words or the grammar knowledge in speaking or writing. Thus, the courses helped them communicate only at word or phrase level using formulaic expressions:

*"The content of the English courses does not help us improve our English. We study some words or some grammar rules, but we cannot make sentences by using them. Therefore, the only thing I learn in these courses is to say some common daily expressions such as 'How are you?', 'I am fine.'"* SS1

Two participants in the group stated that the content of the English courses in vocational school was repetitive which meant that the students were taught the same grammar subjects and vocabulary that they had already learned:

*"I have been studying the same things since the fourth grade in elementary school."* EC2

#### The average subgroup

The opinions of the students in this group were negative as well. All students stated that the English courses' content was irrelevant. The most stated reason was that the content was repetitive and did not include any topics that could satisfy students' needs. The second reason expressed by the minority of the students in the group was that the course content did not include the teaching of communication skills; thus, the best the students believed they would be able to do was to communicate only at word or phrase level, using the individual words or formulaic expressions they had learned.

Six students stated that they could not make any progress in the English courses because of the repetitive content:

*"I do not think it is possible to improve our English by studying the same things we have previously learned in other English courses."* EC3

Two students stated that the content of the English courses was not relevant as it did not meet students' communicative needs:

*"I cannot learn even how to conduct simple daily conversations. Therefore, I can say that I cannot improve my English. I don't think I even have the most basic competence to survive in an English-spoken environment."* EC4

**The weak subgroup**

As was the case in the previous groups, the opinions of the students in the weak group were negative as well. As for the reason for this, the students stated that the course content was irrelevant. The students stated two reasons for that opinion: the course content was repetitive and they were not able to communicate beyond word or phrase level except using the very limited number of words and formulaic expressions they had already learned.

One participant stated that the students did not make any progress in the English course because of its repetitive content:

*"We cannot improve our English because we do not make any progress in this system of language teaching which teaches us the same subjects over and over."* SS3

Another student remarked that the content of the English courses was not relevant because it lacked the teaching of communication skills, forcing the students to use the already learned individual words and expressions:

*"We did not improve our English by taking the courses in college as we did not study anything to improve our communication skills. If a tourist asks me something, I can say a word or a phrase like Tarzan."* EC6

The opinions of all subgroups about the relevance of the content of the English courses in college are summarized in Table 1.

**Table 1.** Groups' opinions

| Relevance of the English courses in college | Reasons stated by the groups |
|---|---|
| Irrelevant | *Repetitive content<br>*Communication at word or phrase level |

**Research question 2: Contribution of the English courses to the students' personal and professional lives**

**The successful subgroup**

In the successful subgroup, three opinions emerged about the contribution of the English courses to the students' personal and professional lives: no contribution at all, contribution to personal life only, and limited contribution to both personal and future professional life. The students listed the course content's being repetitive, being able to communicate only at word or phrase level, and inefficient use of class time as reasons. The first two were expressed by all subgroups once again because the students were convinced that they were not going to improve their English by being taught the same grammar subjects and vocabulary items repeatedly in English classes and that what they had previously learned would not enable them to communicate anything beyond telegraphic messages. Inefficient use of class time by instructors and knowing some words related to computers and computer software were also mentioned.

Three students stated that the English courses did not contribute to their lives at all because of their instructor's making inefficient use of the class time:

*"The teacher does not use the class time efficiently. We study only for half an hour. If the class time was used efficiently, we would learn more, and the courses would contribute to our professional lives because English is a world language, and it is used in every field of work."* SS5

Two students stated that the English courses in college would contribute to their personal lives only as it would enable them to communicate with a foreigner in a rather restricted manner at word or phrase level:

*"As we do not make any real progress in the courses, I can only answer a tourist's question by using some words that we study."* EC7

One student remarked that the English courses would contribute to both his personal and future professional life in a limited way, explaining that the only thing he thought he would be able to do in his daily life would be to give directions to a tourist and using some words related to his profession which he could use in his future professional life:

*"We have been studying the same subjects since elementary school so I can easily give directions. When I work after graduation, I will know some words related to our profession such as input, output, etc."* EC2

**The average subgroup**

In the average subgroup, two opinions emerged about the contribution of the English courses in college: no contribution at all and contribution to personal life only. The content's being repetitive, inefficient use of class time, and being able to only communicate at word or phrase level were the reasons mentioned by the students.

Six students stated that they believed that the repetitive content in the English classes would not make any contribution to their personal or future professional lives:

*"I always learn English, but I know I will not be able to do anything with my current English knowledge when I work in the future. Also, I still cannot speak English if I see a tourist."* EC4

One student shared his experience regarding the instructor's inefficient use of class time:

*"The teacher did not use the class time effectively. The only thing he did was to write some rules on the board and leave the class. We did not know what we were doing."* SS6

Two students stated that the English courses would contribute to their personal lives only and that the only thing they could do with the help of these courses was to speak at word or phrase level:

*"The contribution of these courses is limited. I can answer a tourist's question by uttering some words. We can say very simple things to people. I cannot speak more than that. We cannot talk about our profession."* EC5

**The weak subgroup**

Two opinions emerged in the weak subgroup: no contribution at all and contribution to personal life only. Repetitive content and being able to communicate only at word or phrase level were given as reasons.

One student stated that there would not be any contribution of the English courses to her life as she did not learn anything new in the classes:

*"I don't think that there will be any contribution of the English courses. We did not learn anything new and we did not make any improvement."* SS3

Another student explained that the English courses might contribute to her personal life as she could speak with a tourist at word or phrase level:

*"I don't think that I can improve my English in college courses. I can give a reply to a tourist's question in words or phrases. This is the only thing I can do."* EC6

The opinions of all groups about the contribution of the English courses in college are summarized in Table 2.

**Table 2.** Groups' opinions

| Contribution of English courses | Successful Ss | Average Ss | Weak Ss |
|---|---|---|---|
| No contribution | *Repetitive content | *Repetitive content | *Repetitive content |
| | *Inefficient use of class time | *Inefficient use of class time | |
| Personal life only | *Communication at word or phrase level | *Communication at word or phrase level | *Communication at word or phrase level |
| Both personal and professional life | *Communication at word or phrase level | | |
| | *Learning some words related to computers and computer software | | |

**Research question 3: Sufficiency of the number of English class hours**

**The successful subgroup**

The number of weekly hours of English instruction is 2 for the SS department and 4 for the EC department. Two opinions were expressed by the students in the successful subgroup regarding the number of weekly instructional hours: sufficient and not sufficient. Three students in the EC department who thought that the number of hours was sufficient suggested that the English courses should be conducted on two different days instead of conducting all four hours consecutively on one single day:

*"Class hours are sufficient, but they should not be conducted successively on the same day. The classes should be taught on two different days."* EC1

One student in the SS department shared the opinion that the current number of hours was sufficient because he believed that the same content would be repeated if additional hours were added and the students would get bored:

*"The way things are, I guess even two hours is enough. There is no need to increase the number of class hours because we always study the same grammar topics and vocabulary. If the number of hours is increased, students will get bored."* SS1

Three students believed that the number of class hours was not sufficient. They stated three reasons for that opinion: the need for more class hours to learn English better, more time to teach new course content that did not repeat itself, and loss of class time due to the use of inefficient instructional techniques used in the classroom.

One student in the EC department stated that the number of hours was not enough and that the number of hours should be increased to prevent forgetting and to help students improve their English:

*"Four hours a week is not enough because everything in our minds disappears during the one-week interval until the next class as we do not make any revision after class. If the courses are conducted for two hours every day or at least three days a week, the students will not get bored; the lessons will be more enjoyable, and we will be able to learn better."* EC2

Two students in the SS department agreed that the number of hours was not sufficient to learn English and added that changes should be made in the way English courses were taught by modifying the content and instructional techniques used in the classroom:

*"Two hours a week is not enough for us. The English course should be at least four hours a week in order to improve our language skills. We need to learn new things to speak. What we have always learned does not help us speak or understand others. Teachers should give us chances to speak. We listen and write mostly. In this teaching system, a two-hour-a-week course is really enough."* SS8

**The average subgroup**

Students in this subgroup also stated two opinions about the sufficiency of the English class hours: sufficient and not sufficient. Some of the students who found the number of class hours sufficient suggested that they should have the same number of hours but on several days as some students in the successful subgroup did. Three students remarked that the number of class hours was not sufficient; they stated three reasons for that opinion: the need for more class hours to learn English better, more time to teach new course content that did not repeat itself, and loss of class time due to the use of inefficient instructional techniques in the classroom. Five students thought that the number of English class hours was sufficient. Those students suggested that the classes should be conducted on two different days:

*"I find four hours sufficient, but we get bored and tired during those successive lessons. The classes should be taught in two hours on two different days."* EC5

Three students said that the number of instruction hours was not sufficient and that there should be more English classes on different days:

*"Four hours a week is not enough; we need more classes. Also, students' willingness to learn English will increase if the lessons are taught on different days."* EC2

**The weak subgroup**

The students in the weak subgroup stated that the number of English class hours was sufficient. One student suggested that English classes should be taught on two different days:

*"The number of class hours is enough but they should not be taught successively. It will be better for the students to take the classes on two different days."* EC6

A student in the SS department stated that the number of English class hours was sufficient because English was not essential either in their department or for professional purposes after graduation:

*"The number of class hours is sufficient for our department because we have nothing to do with English here. Also, I do not think that we will need English when we work in our field in the future."* SS3

The opinions of all groups about the sufficiency of the number of English class hours are summarized in Table 3.

**Table 3.** Groups' opinions

| **Sufficiency of English class hours** | **Successful Ss** | **Average Ss** | **Weak Ss** |
|---|---|---|---|
| Sufficient | *Same number of hours on different days | *Same number of hours on different days | *Same number of hours on different days |
| | *Repetitive content | *Repetitive content | *No need for English |

| | | |
|---|---|---|
| | | *Inefficient classroom techniques |
| Not sufficient | *More class hours on different days | *More class hours on different days |
| | *Repetitive content | |
| | *Inefficient classroom techniques | |

## Discussion

This study aimed to obtain vocational school students' opinions on three aspects of the compulsory English courses. The first one was the relevance of the content of the compulsory English courses to the students' needs. The students' opinions in that regard were mainly negative. The majority of the students stated that the course content was not relevant to their needs because not only did they think they didn't learn anything new because of the repetitive course content but also the only thing they could do with English even after taking university-level courses was to communicate at word or phrase level. These findings indicate that the courses did not meet the students' needs. The students want to speak and use English communicatively instead of seeing the same grammar and vocabulary items over and over as if they were new. To sum up, the students want to study new course content that consists of genuinely new material which focuses on actual language skills, not grammar and vocabulary which are language areas.

The second purpose of this study was to find out whether the students could use the English they studied in college in their personal and future professional lives. The majority of the students stated that they did not believe there would be any contribution of the English courses to their lives as they did not learn anything new. Some students stated that the courses would be helpful in their personal lives as they would be able to communicate with foreigners in a limited way. Only one student stated that the courses would contribute both to his personal and future professional life though in a limited way.

The third purpose of this study was to obtain the students' opinions about the sufficiency of the number of current English course hours. The students mostly did not find the current number of hours sufficient because they did not think that they could learn English well in such a limited time. The students who found the number of hours sufficient did not actually mention anything positive; they stated that there was no need to have more classes as they were not learning anything new. Some students in the EC department also suggested that it would be better to have their weekly four hours of classes on different days.

A glance at the curriculum of the compulsory English courses in vocational colleges would show that there are mismatches between the goals of the courses and the actual classroom implementations reported by the students. It is important to understand the goals of the English courses in vocational schools and how they were formulated. YÖK created a national qualifications framework in accord with the Bologna Process in 2005, and the first Commission of Qualifications for Higher Education was founded in 2008. The commission included higher education institution representatives and produced the National Qualifications Framework for Higher Education which stated the knowledge, skills, and competencies that were expected to be gained minimally at the end of associate, bachelor's, master's, and doctoral degrees. Later that year, new working groups for Qualifications for Higher Art Education and Higher Vocational Education were included. In the YÖK Communication and Social Competences described in the *National Qualifications Framework for Higher Education* in Türkiye for level 5 (Associate degree), available at http://tyyc.yok.gov.tr/?pid=32, it is stated that students should be able to "monitor the developments in the field and communicate with peers by using a foreign language at least at a level of European Language Portfolio A2 General Level." That means a vocational school graduate in Türkiye is expected to able to use English at the A2 level.

The Council of Europe (2018, p. 163) describes the prominent features of the A2 level as performing social functions such as using simple everyday polite forms of greeting and address, greeting people, asking how people are and reacting to news, handling very short social exchanges, asking and answering questions about what people do at work and in their free time, making and responding to invitations, discussing what to do, where to go and making arrangements to meet, making and accepting offers, making simple transactions in shops, post offices, or banks, getting simple information about travel, using public transport, asking for basic information, asking and giving directions, and buying tickets.

As there are no second-year English courses in the majority of vocational schools, the compulsory first-year English courses are the only courses that will help students to attain the A2 level proficiency. Some schools offer additional courses such as Business English, but the content of those courses is different and includes the teaching of the professional jargon related to the students' future field of work.

The participating students in this study stated that they did not learn anything new in their English classes and that the only (and the best) thing they were able to do was to speak English at word or phrase level. Based on the findings presented here, it is clear that the students are not able to perform the language functions formulated for the A2 level.

Another issue that requires reconsideration is the time limitation. Cambridge Assessment English (2013, p. 4) announces the required time in hours for each level of proficiency in the chart below:

Common European Framework Guided Learning Hours (from beginner level)

| CEFR Level | Number of Hours (approximate) |
|---|---|
| C2 | 1,000—1,200 |
| C1 | 700—800 |
| B2 | 500—600 |
| B1 | 350—400 |
| A2 | 180—200 |
| A1 | 90—100 |

The students in the SS department who have two hours of English a week will have a total of 56 hours of English classes as there are two fourteen-week semesters in one academic year. The students in the EC department who have four weekly hours will have a total of 112 hours of yearly English instruction. It is clear that reaching the A2 level proficiency through these current number of instruction hours is not an attainable goal. The number of instruction hours is clearly insufficient. The content of the courses does not meet the students' needs either. These are two major reasons that cause the students to believe that the English courses do not make any contribution to their personal and future professional lives.

As the number of class hours is limited, instructors choose to teach a limited number of grammar rules and words almost all of which have been repeatedly taught to the students in their previous English courses. This way, instructors feel as if they are using the class time by doing something tangible and useful for their students as they write information on the board about grammar topics and vocabulary. As time is limited, teachers do teaching mainly, and production almost never takes place. Students are not involved in activities which may help them use English productively. West (2015), referring to the 2015 EPI Index, summarizes the emergent picture in this study as follows:

"Turkey's proficiency level has been drifting downward since 2012. In Turkey, instruction in English is highly grammar-driven, with a repetitive curriculum and few communicative teaching methods." (p.12)

The solution for this is to increase the number of weekly class hours and create new course content that will help students perform the descriptors for the A2 level as CEFR level descriptors are based on needs analysis. The new content should include the teaching and practice of all four skills so that students can begin to perform the can-do statements listed in the CEFR.

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iojes
www.iojes.net

International Online Journal of Educational Sciences

ISSN: 1309-2707

# Effectiveness of Values Education with Animations in Social Studies Teaching*

*Research Article*

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**To cite this article:** Kilic, E., & Yesiltas, E. (2021). Effectiveness of values education with animations in social studies teaching, *International Online Journal of Educational Sciences, 13*(5), 1370-1387.

ARTICLE INFO

*Article History*:

Received: 16.01.2021

Available online: 08.11.2021

ABSTRACT

The present study aims to equip students with the value of scientificity through animations within the scope of 7th-grade social studies course at the middle school level. In this regard, its purpose is to identify if there are any significant differences between the experimental group with whom animations were used for the instruction of the value of scientificity and the control group with whom the course was conducted in the traditional way in terms of the acquisition of the value and to see whether animations are effective in the indoctrination of the value. Explanatory sequential design, one of the advanced mixed methodology designs, was used for the study envisaged to be conducted in an in-depth manner. The true experimental design was employed for the quantitative aspect of the study. Out of these designs, the Solomon four-group model was preferred as it is the experiment model with the highest scientific value. The method of case studies was used for the qualitative aspect of the study since it provides researchers with a profound point of view concerning the cases. The study group consists of 7th-grade students enrolled at two public middle schools at the central district of the province of Sivas during the spring semester of the 2018-2019 school year. The Scientificity Scale was used for the quantitative part of the study while semi-structured interview forms were employed for the qualitative part for data collection. The analysis of the quantitative and qualitative data collected within the scope of the study revealed a significant difference between the students in the experimental group and those in the control group in favour of the former in terms of the arithmetic means of the post-test results regarding the value of scientificity. The qualitative data collected during the study also support this outcome. The study concludes that animations are effective teaching tools concerning values education of students, providing suggestions in this respect.



* Bu makale birinci yazarın ikinci yazar danışmanlığında yürüttüğü yüksek lisans tezinden türetilmiştir. Bu makale 10 - 11 Aralık 2020 tarihinde Ankara'da düzenlenen "The 3rd International Conference on Distance

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DOI: https://doi.org/10.15345/iojes.2021.05.006

**Keywords:**
Social Studies, Values Education, Animation, Values Education through Animations, Value of Scientificity

## Introduction

One of the fundamental purposes of education is to equip individuals in the cognitive sense while cultivating them in the affective sense. In other words, education aims to raise individuals who are well-equipped with knowledge and skills and who have solid and good characters. In this regard, values education naturally has a considerable impact on the endeavour of providing people with the knowledge of what is right, good and beautiful, the affective internalisation of this knowledge by learners, and the translation of this knowledge into behaviour (Kantar, 2014, p. 1). Therefore, it is important to make sense of the concept of "value" included in values education. Values are abstract and generalised behavioural principles formed by strong emotional bonds between the members of a group, providing a standard for the evaluation of certain actions and goals (Theodorson & Theodorson, 1979). Another definition considers values as features or qualities indicating the degree of significance for something, making it sensible, desirable, useful and worthy of attention (Cevizci, 2014). Doğanay (2009) defines values as thoughts to which individuals attach importance and by which they are affected throughout their lives. According to Akbaş (2008, p. 14), values indicate to individuals constituting society what is important, what things should be preferred or, in other words, how one is supposed to live. In this respect, one can infer that values are considerable concepts in individuals' lives, be it personal or societal. This makes the necessity of the acquisition of certain values by individuals evident.

From past to present, education has been the most important factor for the communication and indoctrination of values. In addition to the mission of providing individuals with basic knowledge and skills, educational institutions also have a remarkable feature of value transfer. Values education aims to reinforce this transfer of values within the educational system. This transfer concerns the curriculum and moral environment at school (Schroeder, 2012). In fact, Parker (2001) stated that these values should be reflected in the actions or behaviour of individuals for raising them in light of the values accepted by society and these values should be internalised for an orderly societal life. Values education covers the instruction of cultural, social, political and aesthetic values within society (Veugelers & Vedder, 2003).

The adoption of the constructivist approach within the Turkish educational system has brought about the design of curricula suitable for this approach. All curricula developed and revised as of 2005 has included values education. The acquisition of the values indicated in the curriculum is one of the primary objectives of the social studies course (Keskin, 2008). Its historical content and the fact that it deals with different cultures and their life stories makes the social studies course significant in terms of the acquisition of values (Kan, 2010). Additionally, its multidisciplinary nature is another consideration rendering social studies an important course for the instruction of values. According to the social studies curriculum revised in 2017, the values to be acquired by students are set to be "scientificity, consideration of family unity and the sense of responsibility, solidarity and philanthropy, liberty and responsibility, aesthetics and consciousness towards cultural heritage, consciousness towards the natural environment, patriotism, honesty, industriousness and scientific ethics, independence, equality, peace, and respect" (MEB (Ministry of National Education), 2018). The curriculum specifies the sessions in which certain values to be taught. However, it lacks adequate information concerning the way the teacher instructs on these values, the material and resources to be used, and the activities to be completed (Kantar, 2014).

A plethora of effective methods and techniques can be used for values education. The advancement of technology has brought about considerable innovation in education and teaching. For instance, smartboards, tablets and computers have become the main tools used in classes. The use of digital applications and tools is

essential for effective learning of students who were born to the digital world. It has become possible to use many digital practices and tools in the classroom setting. Animated videos are one of these tools. Animations are defined as a series of moving pictures brought to life narrating the movement of a drawn or enacted object (Burke, Greenbowe, & Windschitl, 1998). They are created with the connection of multiple pictures and graphics, of subsequent visuals. In the technical sense, animating involves making pictures or drawings move and directing and modifying them. In other words, animations are produced by making multiple pictures and graphics move within the framework of a script and connecting these moving visuals (Çelik, 2007).

Animations appeal to multiple senses by using both video and audio and when designed in a way progressing from basic to complex, allows for facilitated and permanent learning (Najjar, 1996). According to research, the collective use of audio and video augments the perception of the viewer by 75% when compared to their separate use (VGAnimasyon, 2015). It is also stated that animations help with internalised learning and have great potential in education (Mayer & Moreno, 2002) and that they produce effective and considerable results particularly for complex learning (Rosen, 2009). The social studies course involves multiple abstract concepts (Çağıran, 2008), including values. Concretisation of abstract knowledge and concepts by students is vital for permanent learning. The visualisation of knowledge and concepts is the major step enabling this. Therefore, it is considered that animations, allowing for the effective teaching of many abstract topics, may be used for the concretisation and instruction of values covered by the social studies course.

The body of research within the relevant academic literature reveals that many courses make use of animations at different educational levels and that animations are effective methods to increase academic success. However, the number of studies dealing with the use of animations in the social studies course seems to be limited. The study by Akaydın (2016) examines the impact of the implementation of the animation-based 5E model in the social studies course on students' academic success levels and attitudes towards the course. The study by Aktürk (2012) attempts to identify the effect of the use of animations and digital maps in social studies courses on students' spatial perception skills. However, the review of relevant literature did not reveal any study aiming to indoctrinate values to students by means of animations. Therefore, one might argue that the present study will be one of the first of its kind as it is based on the acquisition of values by students through the use of animations. The study is deemed significant since it provides practitioners with alternative methods regarding the effective teaching of values within the scope of social studies classes and guides potential studies in the same field. In this respect, the present study aims to teach the value of scientificity included in the curriculum of the 7th-grade social studies course through animations. The research process attempts to answer the questions of whether animations are an effective method for teaching 7th-grade students the value of scientificity included in the social studies curriculum and of whether animations facilitate the acquisition and adoption of the value among students. In this regard, the study objective is to identify if there are any significant differences between the experimental group with whom animations were used for the instruction of the value of scientificity and the control group with whom the traditional course structure was followed in terms of the acquisition of the value and to see whether animations are effective in the indoctrination of the value.

## Methodology

### Research Model

Explanatory sequential design, one of the advanced mixed methodology designs, was used for the study envisaged to be conducted in an in-depth manner. The explanatory sequential design may make use of quantitative data, then it collects qualitative data to complete and refine the quantitative data (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2016, p. 258). The aim of this design is the use of qualitative data to explain quantitative data in a more detailed manner. The first step of the process involves collecting and

analysing quantitative data. Then, it attempts to contribute to the explanation of quantitative responses through the interviews conducted in the qualitative stage (Creswell, 2014, p. 224). The reason behind the preference of this approach is that quantitative data and their analysis provides the researcher with a broad understanding of the research problem. The aim behind the collection of the data obtained from the qualitative part of the study is obtaining more specific and detailed results through the in-depth examination of the participants' opinions.

The true experimental design was employed for the quantitative aspect of the study. Experimental designs are studies where the causality relationships between the variables are augmented and changes are observed by keeping the variables under control (Tanrıöğen, 2014). This study opts for the Solomon four-group model, the experimental design with the highest scientific value. The reason behind this preference is the endeavour of comparing the levels of acquisition concerning the value of scientificity between the group to which scientific animations suitable for the learning outcomes aiming to teach the value of scientificity specified in the 7th-grade social studies curriculum are given (experimental group) and the one not making use of animations (control group). The method of case studies was used for the qualitative dimension of the study since it provides researchers with a profound point of view concerning the cases. Case study research is a status description in which detailed and in-depth information is collected from multiple information sources or a qualitative approach putting forward situational themes (Creswell, 2014 p. 97). The study is conducted to see whether the value of scientificity, handled during this part of the study, is acquired at the desired level and to what extent animations contribute to the acquisition of the value of scientificity.

**Participants**

The research population consists of 7th-grade middle school students from Sivas. As for the sample of the study, it is composed of 7th-grade students enrolled at two public middle schools at the central district of the province of Sivas during the spring semester of the 2018-2019 school year. The participants in the quantitative part of the study were selected through the method of simple random sampling, one of the random sampling techniques. Within the quantitative dimension of the study, 101 students participated in the pre-test of the first experimental group (G1) while 115 in the post-test. 110 students were included in the pre-test of the first control group (G2) whereas there were 101 students in the post-test. The post-test conducted on the second experimental group (G3) involved 83 students while the post-test for the second control group (G4) included 66 students.

For the qualitative portion of the study, the participants were selected through the non-random sampling method of maximum variation sampling. The reason behind this is to achieve variety by selecting participants from classes with different success levels. Thus, a total of 10 students, 5 female and 5 male, out of the students participating in the quantitative part and from the experimental group were selected for interviews. Owing to the willingness to see the effect of animations more closely, the participants in the interview session were selected from the experimental group. The points of view among the participants were examined thoroughly, allowing the researchers to describe them within a wider framework.

**Experimental Process**

The software tools of GoAnimate (Vyond) and Adobe Captivate were used for animation development. GoAnimate is a digital instrument allowing its users to create infographics, presentations or digital stories. Another design software tool used for the study is Adobe Captivate. The primary purpose of this software is the creation of e-learning content. E-learning covers various presentations, tests, programme simulations, audios and videos. A significant section of the study involves designing animations. During this process, the theme to form the basis of the design was agreed on and scenario simulations were made to see the way to teach the value of scientificity. The scenario simulations were completed, and expert opinions were sought in

this respect. Then, the scenarios prepared with the aim of teaching the value of scientificity were converted into animations by using the animation development software tools of "GoAnimate" (currently named Vyond) and Adobe Captivate.


**Visual 1.** Animations and Screenshots from Adobe Captivate Presentations

Expert opinions and approval were obtained following the design of scientificity-themed animations. Before proceeding with the experimental procedure, the scientificity scale was applied to the first experimental group (G1) and the first control group (G2) as the pre-test. Then, the designed animations were given to the first (G1) and second (G3) experimental groups in subsequent weeks based on available course hours. The practice lasted for a total of five weeks. During this period, the students were given three animations and two Captivate presentations. The five-week process was completed by showing an animation one week followed by a Captivate presentation the next week. In line with the nature of the Solomon four-group model, the animations were given only to the first and second experimental groups. These practices were then followed by the post-test stage. The scientificity scale was applied to the first (G1) and second (G3) experimental groups and to the first (G2) and second (G4) control groups as the posttest. The experiment was concluded after obtaining the post-test results.

**Data Collection**

The study makes use of a scale and a semi-structured interview form tailored for the value of scientificity. The data from the quantitative aspect of the study were collected using the Scientificity Scale developed by Katılmış (2010). The scale is a 5-point Likert scale and consists of 21 (twenty-one) items and 3 sub-dimensions containing 7 items each. These sub-dimensions are "curiosity and critical ability", "evidence use and ethics", and "freedom". The Cronbach's Alpha reliability coefficient calculated for the overall scientificity scale during the scale development stage was found to be .95 while the values were .93 for the

sub-dimension of curiosity and critical ability, .91 for evidence use and ethics, and .79 for freedom. The present study calculated the Cronbach's Alpha reliability coefficient for the overall scale as it deals with the total scientificity scale scores and obtained the value of .84. In line with the Solomon four-group model, the scale was applied to a total of four groups, two experimental and two control groups, created through unbiased allocation. While the pre-tests, i.e. the assessments before the experiment, were given only to two groups, namely the first experimental and control groups, the post-tests were conducted on all groups.

For the qualitative portion of the study, the data were collected by means of a semi-structured interview form prepared for the value of scientificity. The interview form was given to the participants after the completion of the course unit aiming to teach the value of scientificity and the application of animations to the experimental groups. The qualitative data for the research were obtained at the end of the interviews held with the participants.

**Data Analysis**

The data on the scientificity scale used in the study were subjected to the Kolmogorov-Smirnov normality test to examine whether the experimental and control groups display normal distribution; it was observed that both the experimental and control groups displayed normal distribution for all dependent variables. Independent groups t-test was used to see whether there were significant differences between the pre-test scores obtained by the first experimental (G1) and first control group (G2) from the Scientificity Scale before the experiment. Similarly, independent groups t-test was once again used to detect if there were statistically significant differences between the post-test scores of the first experimental (G1) and the first control group. The same test was used to identify whether there were statistically significant differences between the mean scores of the second experimental group (G3) and the second control group (G4). Finally, the one-way analysis of variance (ANOVA) was employed to compare the post-test scores of all experimental and control groups. The Tukey test was conducted to identify the source of the significant difference detected at the end of the analysis.

The data obtained from the qualitative portion of the study were analysed using the Nvivo 12 software tool. Constant comparison and content analysis within the scope of descriptive qualitative analysis methods were used to analyse the data. In this respect, converted to text from interview recordings, the data were then transferred to Nvivo. During this process of data analysis, codes were generated based on the answers given by the participants. Categories were determined in line with the similarities and differences between the codes obtained in this regard. Furthermore, exemplary statements by participants were saved as informational notes to be used while interpreting the themes and categories. The themes obtained from the qualitative data were tabulated along with their percentage and frequency values. Additionally, within the framework of research ethics and the principle of confidentiality, each participant was given a symbol and their opinions were quoted and interpreted verbatim.

## Findings

This section presents the findings obtained at the end of the statistical and descriptive analyses conducted regarding the research problem.

**Quantitative findings**

Independent groups t-test was applied to determine whether there was a statistically significant difference between the scientificity value pre-test and post-test average scores of the experimental group working with animations and the control group using existing teaching methods; Tables 1 and 2 show the results of the test.

**Table 1.** Independent groups t-test results for the pre-test scores concerning the scientificity value of experimental and control groups

| Groups | n | $\bar{X}$ | S | Sd | *t* | p |
|---|---|---|---|---|---|---|
| Experimental Group | 101 | 3.62 | 0.62 | 209 | -1.82 | .07 |
| Control Group | 110 | 3.76 | 0.47 | | | |

Table 1 shows there are no statistically significant differences between the average pre-test scores obtained by the students in the experimental and control groups from the Scientificity Scale applied before the experimental process ($t_{(209)}$= -1.82; p>.05). This indicates that the mean pretest score of the experimental group (N=101) for the scientificity value ($\bar{x}$ = 3.62) is close to that of the students from the control group (N:110) ($\bar{x}$ = 3.76). This may lead to the inference that the experimental and control groups are at around the same level in terms of the value of scientificity prior to the experimental process.

**Table 2**. Independent groups t-test results for the post-test scores concerning the scientificity value of experimental and control groups

| Groups | n | $\bar{X}$ | S | Sd | *t* | p |
|---|---|---|---|---|---|---|
| Experimental Group | 115 | 3.99 | 0.36 | 214 | 13.68 | .00 |
| Control Group | 101 | 3.16 | 0.53 | | | |

The examination of Table 2 revealed that there is a statistically significant difference between the mean post-test results of students from the experimental group and of those from the control group from the "Scientificity Scale" applied following the experiment ($t_{(214)}$=13.68; p<.05). This indicates that the mean post-test scores of the experimental group (N=115) concerning the value of scientificity ($\bar{x}$ = 3.99) were quite higher than that of the students in the control group (N=101) ($\bar{x}$ = 3.16). Therefore, the difference was found to be in favour of the mean post-test scores of the students in the experimental group. In other words, one might argue that the application of animations contributed to the increase in the mean post-test scores of students concerning the value of scientificity.

Within the scope of this study designed using the Solomon four-group model, independent groups t-test was conducted to see whether there was a statistically significant difference between the pre-test and post-test scores of the second experimental group having the animations and the post-test and of the second control group only having the post-test regarding the value of scientificity. Table 3 shows the findings of this test.

**Table 3**. Independent groups t-test results for the post-test scores concerning the scientificity value of the second experimental and control groups

| Groups | n | $\bar{X}$ | S | Sd | *t* | p |
|---|---|---|---|---|---|---|
| Second Experimental Group | 83 | 3.97 | 0.34 | 147 | 11.89 | .00 |
| Second Control Group | 66 | 3.21 | 0.44 | | | |

The examination of Table 3 revealed that there is a statistically significant difference between the mean post-test results of students from the second experimental group and of those from the second control group from the "Scientificity Scale" applied following the application of the experiment to the second experimental group ($t_{(147)}$=11.89; p<.05). This indicates that the mean post-test scores of the second experimental group (N=83) concerning the value of scientificity ($\bar{x}$ = 3.97) were quite higher than that of the students in the second

control group (N=66) ($\bar{X}$ = 3.21). Therefore, the difference identified was found to be in favour of the mean post-test scores of the students in the second experimental group.

Furthermore, a one-way analysis of variation (ANOVA) was conducted to see whether there is a statistically significant difference between the mean post-test scores of the students from the experimental and control groups and those from the second experimental and control groups concerning the value of scientificity. Table 4 shows the results of the said analysis**.**

**Table 4**. ANOVA test results regarding the post-test scores concerning the value of scientificity for the experimental group, the control group, the second experimental group, and the second control group

| **Category** | **n** | $\bar{X}$ | **S** | **sd** | **F** | **p** | **Significant Difference (Tukey)** |
|---|---|---|---|---|---|---|---|
| 1. Experimental group | 115 | 3.99 | 0.36 | 3-361 | 108.5 | 00 | G1- G2, G4 |
| 2. Control group | 101 | 3.16 | 0.53 | | | | G2- G1, G3 |
| 3. Second experimental group | 83 | 3.97 | 0.34 | | | | G3- G2, G4 |
| 4. Second control group | 66 | 3.21 | 0.44 | | | | G4- G1, G3 |

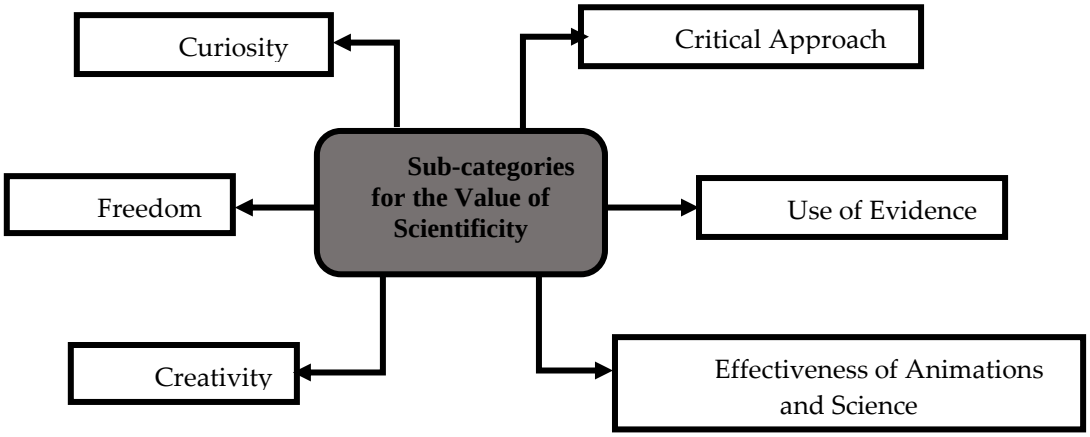
*(G1: Experimental group; G2: Control group; G3: Second experimental group; G4: Second control group)*

Table 4 shows that among the mean scores of students from the first and second experimental and control groups regarding the "Scientificity Scale" applied following the experiment, the first experimental group was found to be the one with the highest mean score ($\bar{X}$=3.99, S=0.36). In terms of the scientificity value post-test scores, the first experimental group was followed by the second experimental group ($\bar{X}$=3.97, S=0.34) and the second control group ($\bar{X}$=3.21, S=0.44). Furthermore, the first control group was found to have the lowest mean scientificity value post-test score ($\bar{X}$=3.16, S=0.53). Thus, a statistically significant difference was detected between the mean scientificity value post-test scores of the experimental and control group students and the second experimental and control group students [$F_{(3\text{-}361)}$ = 108.5; p< .05].

The results of the Tukey test conducted to identify the source of this significant difference between the experimental and control groups indicate that the mean scientificity value post-test scores of the experimental group students and the mean post-test scores of the control group displayed significant differences. Additionally, the post-test score averages of the experimental group students and those of the second control group students also showed significant differences. Furthermore, the mean scientificity value post-test scores of the students from the second experimental group also significantly differed from those of the students from the first and second control groups. In this respect, one might see that the first and second experimental groups to which the animations about the value of scientificity designed with the GoAnimate software tool were given performed higher than the first and second control groups in terms of their mean scientificity value post-test scores.

**Qualitative findings**

The analysis of the interviews conducted with the participants revealed six (6) main categories under the theme of scientificity.




**Curiosity**

The participants were asked if they were curious about the reasons underlying the occurrences in their environments. All participants responded to this question in the affirmative and elaborated on the reasons for their curiosity in a variety of ways. While P3 answered the question by stating that "*Everything must have a reason and a logic behind it, and one learns more as one conducts research, leading to the ease of providing explanations*", P5 made the following statement: "*I believe [the things happening around me] are very peculiar and interesting, that is why I want to explore things. I am curious to learn more about my surroundings*". In light of these students, one might observe that students have an improved sense of curiosity and are willing to get informed about and research the reasons behind the occurrences within their environments. In this respect, students would like to improve their knowledge, thinking that this would make things easier for them and that it would help them, particularly in their courses. Apart from academic interests, they also clearly stated that they have a sense of curiosity and an inquisitive feeling about the topics they are interested in. In regard to these answers, the students then were asked what they do to learn about things. P1 stated that they would "*obtain information from [their] teacher, friends, family, and social environment*". This was not the case for P2 who stated that they "*would make use of the Internet and books to conduct research*". As for P3, they made the following statement: "*I conduct research. First, I check [the accuracy of] my opinions. I compared my own knowledge and thoughts with the information I find online and from books. Then, I reach a conclusion accordingly*". The participants mentioned various resources they use while conducting research. These resources mostly seem to be the Internet, books, and their environments. The table below shows the information resources of the participants.

**Table 5.** Information sources of the participants

| **Information Sources** | **Participants** | **n=10** | **%** |
|---|---|---|---|
| Internet | P2, P3, P4, P5, P6, P7, P8, P9, P10 | 9 | 90% |
| Teacher | P1, P10 | 2 | 20% |
| Observation and Exploration | P5, P6, P7 | 3 | 30% |
| Encyclopaedia | P5 and P9 | 2 | 20% |
| Book | P2, P3, P4, P7, P8, P9 | 6 | 60% |
| Magazine | P5 | 1 | 10% |
| Family | P1, P8, P9 | 3 | 30% |
| Friend | P1, P4, P9 | 3 | 30% |
| Documentary | P4 | 1 | 10% |

**Critical approach**

Another category arising from the participant opinions and at the end of the analyses is the critical approach of students. All participants responded to the question of whether they are able to oppose an opinion universally accepted to be true in the affirmative. Then, they were asked to elaborate on the reasons for their opposition. Each participant expressed their own opinions. For instance, P2 stated that "*Everyone has their own truths but not every opinion must be true. That is why I give my opinion. Maybe the other person is wrong*". As for P3, they said that "*The other party is also prone to mistakes. It would be a good thing to be critical and fix mistakes. I would share my opinions so others learn more, then I would also learn more*". P7 stated that they would "*express [their] opinions if [they] believe the opposite of the universally accepted idea is true*". P8 made a similar statement as follows: "*Yes, I express my opinions and modify them if they contain false information or ideas*". Based on all these statements, one can reach the conclusion that students do not hesitate to express their own opinions and assess occurrences from their own points of view instead of immediately accepting opinions of other parties. In terms of scientificity, students adopting a critical perspective regarding thoughts and events and not accepting existing opinions immediately as they are is a crucial factor. Another sub-question contributing to the formation of the critical approach category and directed at students was about what the benefits of expressing their opinions are. While some participants argued that they would express their opinions to correct a commonly adopted misconception, others claimed that their purpose is to inform the people around them and to contribute to accurate information and science. The following table shows the participant opinions on this matter.

**Table 6.** Participant opinions on the benefits of expressing their opinions

| Participant Opinion | Participants | n=10 | % |
|---|---|---|---|
| Informing people | P2, P3, P4 | 3 | 30% |
| Correcting a mistake | P1, P6 | 2 | 20% |
| Contributing to science | P3 | 1 | 10% |
| Informing one's social environment | P5 | 1 | 10% |
| Communication | P6, P9 | 2 | 20% |
| Expressing the truth | P7, P8, P10 | 3 | 30% |
| Self-esteem | P10 | 1 | 10% |

**Use of evidence**

One of the categories created on the basis of the basic points referred to in the answers of the participants to the questions is the use of evidence. In this regard, the participants were asked what they would look for in an opinion or idea to support that opinion or idea. P1 answered this question as follows: "*I look for evidence for the said thought. I assess the logical explanations made for it, if the evidence is not logical and orderly, I do not believe in it. For me, the evidence must be consistent*". Similarly, P2 stated that "*[They] would look for evidence and question whether the thought is proven scientifically*" while P4 indicated that "*[They] would first see whether the opinion is scientifically proven and conduct research in this regard, Then, [they] would verify the accuracy of the opinion concerned and make arguments accordingly*". Generally speaking, the participants focused on the provability and logicality of the opinion. This concentration was reflected in their answers. Apart from these considerations, the participants are willing to conduct research on the accuracy of the opinion in question and reach the source of the information. Based on all these answers, it was observed that the participants attach importance to the scientific verification and logicality of an opinion in order to support it. One might claim that they approach the opinion objectively and that they pay considerable attention to the presence of tangible evidence to argue in its favour. This attitude of students is crucial for scientificity and may be interpreted as proof for the positive impact of scientificity-related animations on students.

**Table 7.** Participant opinions on supporting an opinion

| Information Sources | Participants | n=10 | % |
|---|---|---|---|
| Presence of Scientific Evidence | P1, P2, P3, P4, P8, P9 | 6 | 60% |
| Logicality | P1, P3, P8 | 3 | 30% |
| Accuracy of the Opinion | P5, P8, P10 | 3 | 30% |
| Consistency of the Evidence | P1 | 1 | 10% |
| Reliability of the Person Expressing the Opinion | P7, P9 | 2 | 20% |
| Alignment with One's Own Opinion | P8, P9 | 2 | 20% |
| Strong Evidence | P6, P7 | 2 | 20% |
| Beneficialness of the Opinion | P4, P10 | 2 | 20% |

**Freedom**

Another category formed based on participant statements and analysis under the theme of scientificity is freedom. Upon being asked whether freedom is necessary for scientific development and the reasons behind their answers, all participants responded in the affirmative. P1 stated that they believe freedom is necessary because "*[...] throughout the course of history, we see that some scientists were sentenced to death because of their inventions or ideas. This is not the way things should be, so freedom is crucial*", and P3 expressed a similar opinion by saying that "*Freedom is absolutely necessary because one cannot revert a false opinion without liberty. The lack of freedom results in the hiding of inventions and explorations; no one would share their knowledge and ideas. That is why freedom is vital*". Similarly, P5 said: "*Yes, freedom is necessary. If a person is not free, I do not think they can contribute to science. The scientist must experiment, must explore. How can they do these things if they are not free?*". P9 stated that freedom is necessary "*[...] because science cannot develop without freedom. For example, the Pope's opinion was central in medieval Europe and it was not possible to create alternative opinions. Now, since this is no longer the dominant mindset, science has thrived in Europe, leading to today's advanced technologies*". The approach leading to scientific development and the needs to provide people with opportunities and to have freedom of thought were highlighted by the participants. Based on these findings, one might argue that the animations created about scientificity proved to be effective. In light of all these insights, the participants were asked about the benefits of freedom. Generally, the participants argued that freedom allows one to easily access accurate knowledge, to create novel ideas, to find solutions for problems, and to do experiments and explorations. Furthermore, they also stated that freedom is good for the implementation of a discovery or invention, the sense of safety due to the lack of intellectual judgement, and the common welfare. Based on these claims, one can see that the participants are aware of and support freedom.

**Table 8.** Participant opinions on freedom

| Participant Opinion | Participants | n=10 | % |
|---|---|---|---|
| Access to correct information | P1, P5, P6, P8, P10 | 5 | 50% |
| Expressing opinions | P2, P4, P7 | 3 | 30% |
| Problem-solving | P3 | 1 | 10% |
| Generating novel ideas | P3, P4, P8 | 3 | 30% |
| Scientific development | P5, P8 | 2 | 20% |
| Environment of trust | P9 | 1 | 10% |
| Experimentation and exploration | P4, P6 | 2 | 20% |

**Creativity**

Another category emerging as a result of the participant answers given to the question of whether they are curious about creating something new and their reasons as well as of their analyses is creativity. In this regard, P2 said: "*Yes, because I would like to be useful for society. I would love to create something beneficial for society. Other than that, I would also like to create things for the sake of scientific advancement*". P3 gave the following answer regarding their motivations for creativity: "*To improve [themselves] and to be of use for humanity. To make life easier and better*". The answers given by the participants revealed that they have positive attitudes towards creating novelty. Some of the participants seem to underline individual and societal benefits for creativity. Another question directed at the participants was about the reasons why they wanted to create something new. P2 argued that "*If we cannot create, we cannot proceed. For instance, let us consider the technological tools we use today. If we are not able to create, we keep using the same tools. There would be no advancement. The future would not be different from the present*" while P8 stated that they wanted to create new thing "*To make life easier, to be useful for society, and to improve technology even further*". Other participants making similar statements indicated that the reasons behind their willingness to create were to make their lives and societal life easier and to obtain benefits. The participants seem to highlight the motivations of improving oneself, making life easier, and contributing to society for creativity. Some participants wanted to create novelty for the sake of scientific and technological development. The willingness to create novelty, particularly in the areas in which students are interested and the motivation of individual and societal benefit underlying this willingness is vital for scientificity. Students seem to think not only of themselves but also the benefits for the society they live in. In this regard, one might argue that students are aware of the obligation not to use science and technology for bad intentions in non-ethical ways, adopting these principles.

**Table 9.** Participant opinions on creating novelty

| Participant Opinion | Participants | n=10 | % |
|---|---|---|---|
| Being useful for society | P1, P3, P5, P7, P9, P10 | 6 | 60% |
| Technological advancement | P2, P8 | 2 | 20% |
| Personal development | P3, P9, P10 | 3 | 30% |
| Making life easier | P3, P5, P6, P8 | 4 | 40% |
| Acquiring knowledge | P4 | 1 | 10% |
| Material gain | P4, P7 | 2 | 20% |
| Needs | P7 | 1 | 10% |

**Effectiveness of animations and science**

The category of "effectiveness of animations and science" emerged based on the data obtained from the participants. In this regard, the participants were asked about what they learned from the animations shown regarding science. P1 said: "*The animations were lovely. I understood that technology develops along with science. I learned that freedom of thought must be present for science to develop and for scientists to create novelty*". P2 made the following remark: "*I learned that science is based on evidence, that it is methodical*". P5: "*We must not accept things as they are immediately, we must be inquisitive. If we want to do science, we must work harder*". As for P8, they made the following statement: "*I learned that everything around us happens for a reason, as a consequence of other occurrences. I learned that science is useful in many ways, like curing diseases*". Similarly, P9 and P10 expressed their opinions in the following ways, respectively: "*I learned that science develops through curiosity and creativity along with the scientific research methodology*" "*I learned a great deal about science and technology from the animations. For example, I learned about how they improve. I learned that freedom is necessary for their development*". Each participant explained the things they learned from the animations about science. They underlined the importance of science, stating that technology and science develop simultaneously. Furthermore, their statements reveal that

they are aware of the fact that science is based on evidence and a certain methodology and of some of the fundamental scientific concepts such as curiosity about the occurrences within one's surroundings, research, and the establishment of causal relationships.

Based on these findings, the students were asked whether and how their perceptions of science have changed. All participants stated that their perceptions "*have changed*". Regarding the manner of these changes, P1 made the following statement: "*Yes, my perception has changed. I realised how important scientific studies are, for both ourselves and our country. Because if we do not do science, we cannot develop*". P6 said: "*Yes, there have been changes. Before seeing the animations, I was less curious about science and was not really fond of research. Now I research the topics I am interested in*". While P8 stated that their perceptions have changed as they "*[...] learned that science is everywhere. [Their] point of view regarding my surroundings has changed. Now [they] question the reasons behind the events occurring around the environment we live in or ask the teachers about them*", P10 made the following remarks: "*Yes, they have changed. I learned about the large extent of science. I believe science can only develop in a liberated environment, so our country must have freedom for scientific advancement*". Based on these statements above, one can argue that the opinions of participants have changed and developed for the better. Students claimed that the animations they watched helped them understand the importance and value of scientific studies and comprehend that science requires curiosity, research and hard work while allowing them to realise that they would like to pursue science. It is possible to indicate based on the quantitative and qualitative data obtained from the participants regarding the acquisition of the value of scientificity that animation practices contribute to the learning of the value in question. Both qualitative and quantitative data support this statement.

**Table 10.** Participant opinions about the animations on scientificity

| Participant Opinion | Participants | n=10 | % |
|---|---|---|---|
| Fun | P1, P2, P3, P4, P5, P6, P9, P10 | 8 | 80% |
| Catchy | P3, P8 | 2 | 20% |
| Informative | P1, P3, P5, P6, P7, P9 | 6 | 60% |
| Mnemonic | P3 | 1 | 10% |
| Comprehensible | P4, P8 | 2 | 20% |

## Results and Discussion

The study results reveal that prior to the experimental process, there were no significant differences between the mean pre-test scores of students from the experimental group and the control group from the Scientificity scale. As it is a prerequisite for the initiation of the experimental research, one might say that this lack of statistically significant differences between the experimental and control groups is not unexpected. A statistically significant difference was identified between the mean scientificity value post-test scores of the experimental group using animations as a method to acquire the value of scientificity and the control groups at the end of the experimental process. Mean scientificity value post-test scores seem to be much higher in the experimental group than the control group, indicating that the difference is in favour of the former. This might be interpreted in support of the contribution of animations in value acquisition. Thus, the relatively high gap between the two groups seems to strengthen this argument. Similarly, the mean scientificity value post-test scores of the students from the second experimental and control groups revealed a significant difference in favour of the former making use of animations. As it was the case in the first experimental and control groups, the gaps between the two groups are quite considerable.

The analyses conducted on the post-test scores obtained from the Scientificity Scale by the four groups included in the study detected statistically significant differences between both experimental and control groups. The difference between the first experimental group and the first and second control groups seems to

be in favour of the experimental group. Similarly, the difference between the second experimental group and the first and second control groups also seems to be in favour of the experimental group. In other words, there was a statistically significant difference between the average scores of the students from the experimental and control groups from the overall Scientificity Scale in favour of the experimental group. The assessment of the findings of the present study designed based on the Solomon four-group model revealed that animations, the independent variable for the study, influence the acquisition of the value of scientificity by students. At the end of the experiment and statistical analyses, one might argue that the internal consistency of the study is high since significant differences in favour of experimental group students and mean post-test scores were found as far as the first and second experimental and control groups are concerned. Furthermore, once again, based on these results, one might observe that animations influence the value acquisition levels of students more profoundly when compared to the traditional methods. From this perspective, one might indicate that the use of animations for teaching improves value acquisition among students by ensuring active participation of students in classes and enjoyable learning through a gamified process.

The review of the relevant literature revealed that animations are used in many courses and disciplines for teaching a wide range of topics. It seems like animations are preferred particularly in the teaching of various disciplines under the Science course as an effective practice. National and international research studies found that the use of animations in science classes contributes to the academic success of students at different grade levels (Akkaya, 2016; Tecimer-Altınel, 2018; Altaş, 2016; Boyacı, 2016; Ceylan, 2016; Çamloğlu, 2014; Dalacosta, Kamariotaki-Paparrigopoulou, Palyvos & Spyrellis, 2009; Danacı, 2018; Daşdemir, 2012; Erdemir, 2012; Eryiğit, 2018; Gündüz-Bahadır, 2012; Hamzat, Bello & Abimbola, 2017; Karagöz, 2016; Sanger, Brecheisen & Hynek, 2001; Temur, Erdemir & Artun, 2017; Yusuf & Afolabi, 2010). Additionally, a few studies focused on the use of animations in social studies courses. The study by Aktürk (2012) found that the collective use of animations and digital maps significantly contribute to the academic success of students in the social studies subject. However, another study by Akaydın (2016) making use of the 5E model supported by animations revealed that the methodology implemented did not affect the academic success levels of students in a considerable way. Besides, the relevant body of research found that the use of animations improves the academic success of students in the subjects of Turkish (Özcan, 2015; Sancak, 2011; Yıldırım Kaya, 2016), mathematics (Kervin, 2007), English (Lin, Chen, & Dwyer, 2006), music (Orhan, 2019), and physical education (Öner, 2015). The literature mostly agrees on the argument that the use of animations contributes to the academic success of students in a variety of disciplines at varying grade levels. These outcomes correspond to the findings of the present study making use of animations.

The results obtained from the qualitative data collected within the scope of the study support the quantitative outcomes. At this point, the study revealed through the analysis of quantitative and qualitative data that value acquisition by means of animations affects students positively. Student statements indicating that their curiosity and critical approaches, included as sub-dimensions of scientificity, were improved at the end of the teaching process with animations also support this result. Positive student opinions on the use of evidence, freedom and creativity, other sub-dimensions of scientificity and their statements affirming their improvement regarding these sub-dimensions are also consistent with the study findings. Similarly, students stated that through teaching with animations, they realised the importance of science, learned that science is based on evidence and a certain methodology, and became aware of fundamental scientific concepts like curiosity about one's surroundings, research, and the establishment of causality relationships.

Another significant outcome of the present study is the identification of positive opinions and attitudes among students regarding the use of animations in courses based on their considerations on the indoctrination of science through animations. Students stated that learning via animations is effective, fun, catchy, mnemonic and informative. Within the scope of the study by Akaydın (2016), the students included in the group making

use of animations argued that conducting courses with animations help them understand the subject, consequently making courses easier, informative, motivating and enjoyable. The study by Hoban (2008) revealed that prospective primary school teachers believe animations help students understand concepts better, have an easier time learning, and do not have as many difficulties as before. Similarly, the study by Hoban and Nielsen (2010) revealed that animations considerably facilitate the comprehension of a scientific topic. The studies by Altaş (2016), Ceylan (2016) and Daşdemir (2012) also reported positive opinions among students regarding the use of animations. Based on these results, the study concluded that values education by means of animations positively influence the acquisition of necessary knowledge, attitudes and behaviour for the value of scientificity by students. In other words, teaching through animations may be an effective method for the attainment of both cognitive and affective learning outcomes by students.

The present study reached the conclusion that animations positively affect the improvement of scientificity levels of students. According to Öztürk (2007), one of the purposes of the social studies course is to allow students to develop their scientific thinking skills. One might state that the use of animations improves the scientificity levels among students while facilitating the achievement of the objectives of the social studies course. Therefore, the organisation of similar studies for all other courses and other values included in the curriculum may produce effective results. As the present study focuses on the value of scientificity included in the learning area of technology and society of the 7th-grade social studies course, future studies may examine different learning areas at different grade levels regarding other values handled within these scopes. This may have significant contributions to the field of social studies education with only a handful of research studies on the use of animations and values education.

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International Online Journal of Educational Sciences

ISSN: 1309-2707

# Investigating Lesson Study Model within the Scope of Professional Development in Terms of Pre-Service Teachers*

*Research Article*

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**To cite this article:** Aykan, A., & Dursun, F. (2021). Investigating lesson study model within the scope of professional development in terms of pre-service teachers, *International Online Journal of Educational Sciences, 13*(5), 1388-1408.

ARTICLE INFO

*Article History*:

Received: 11.02.2021

Available online: 01.11.2021

ABSTRACT

Training qualified teachers is one of the most important factors the quality of education systems. The process of educating pre-service teachers is sine qua non for training qualified teachers. This study aimed to examine lesson study model within the scope of professional development in terms of pre-service teachers. The research adopted a single case study, one of the qualitative research methods. The sample consisted of senior students in Division of Classroom Education (Muş Alparslan University Faculty of Education) in the 2017-2018 academic year. Criterion sampling was used to recruit volunteer pre-service teachers (four males and four females). A curriculum was developed to introduce lesson study model to pre-service teachers. Data were collected with semi-structured interview forms and teacher diaries. Semi-structured interviews were held at three different intervals and in three different contexts: interviews conducted before the curriculum, interviews conducted after the curriculum, and interviews conducted after the implementation. Pre-service teacher diaries were completed each week after the implementation. Data obtained from semi-structured interviews and teacher trainee diaries were analyzed by two different coders by the help of content analysis method. Findings showed that lesson study model made a significant positive contribution to the professional development of pre-service teachers in various aspects such as lesson plan, teaching methods and techniques, and course evaluation. Lesson study model was found to have some limitations; thus, recommendations were provided regarding how to implement the model better.



**Keywords:**
Lesson Study Model, Teacher Professional Development, Pre-Service Teacher Training, Case Study, Content Analysis

*This study is derived from the first author's doctoral thesis titled "Investigating Lesson Study Model within the Scope of Professional Development in Terms of Pre-Service Teachers" conducted in 2019 at Tokat Gaziosmanpaşa University, Educational Sciences Institute, Department of Curriculum and Instruction.

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DOI: https://doi.org/10.15345/iojes.2021.05.007

## Introduction

Recent studies have indicated the quality of teachers as one of the most important factors behind the success or failure of education systems of countries (Günay, Yücel-Toy and Bahadır, 2016). In particular, being a teacher who is open to change and closely follows developments in the world is quite important (Dursun, 2016). Efforts to train qualified teachers have become one of the priorities of education systems in the world. In this context, considering the efforts for increasing qualified teachers around the world, the successful results of developed countries come into prominence (Aykan and Kartal, 2017). The results of international examinations such as PISA and TIMSS, which indicate the success of education, bring the education systems of the top countries to the forefront. Countries taking into account this situation examine teacher training policies of nations that are successful in educational activities in terms of qualified teacher training.

PISA 2015 shows that East Asian countries (Singapore, Japan, South Korea, China) take the top steps in mathematics, science and reading skills categories (OECD, 2015). In addition, the education systems of East Asian countries, especially Japan, have attracted attention since the exam results of TIMSS 1999. Researchers have focused on East Asian countries (Japan, Singapore, China, South Korea), which were again successful in TIMSS 2015 in mathematics and science categories (TIMSS, 2015). In this context Lesson Study (LS), which is a professional development model originated in Japan, gains importance.

LS comes from the Japanese concept of "Jugyou Kenkyuu". This concept consists of the combination of two Japanese words: "Jugyou" (lesson) and "Kenkyuu" (study). It is widely used in East Asian countries and expressed with different names in these countries. It called "Learning Study" in Hong Kong, "Action Education" in China, and "Lesson Study" in many Asia Pacific Economic Cooperation (APEC) countries and the US. Not only does it include activities such as making lesson plans for a purpose in collaboration with a group of teachers, implementing this plan in a live classroom environment, observing and analyzing this implementation, and revising this plan according to observations but also it is expressed as a professional development model which includes teacher professional development (Arani and Matoba, 2006; Becker, Ghenciu, Horak and Schroeder, 2008; Dudley, 2013; Fernandez, 2005; Lewis, 2002a, 2002b; Makinae, 2010; Murata, 2011; Norwich and Ylonen, 2015; Saito and Atencio, 2013; Tan, 2014; Wang-Iverson and Yoshida, 2005).

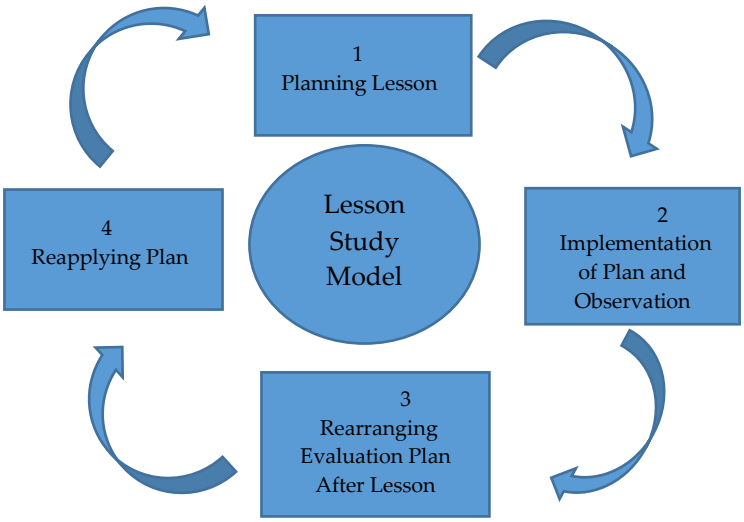


**Figure 1.** Implementation Process of Lesson Study Model (Bruce and Ladky, 2011)

As is seen in Figure 1, LS includes an on-going process with a cyclical understanding. The process, which starts with teachers' preparing a lesson plan together, continues with the implementation of the lesson plan and observation. Following the implementation of the lesson plan in the classroom, an evaluation meeting is held after the lesson based on the data obtained during the observation process. Within the scope of this

meeting, the lesson plan is rearranged in line with new ideas and suggestions. Finally, the revised plan is re-applied in the classroom by another teacher. This cyclic process can be carried out one or more times depending on the needs of the participants.

In Japanese culture, a lesson is likened to a fast-flowing river, and the teacher is likened to a passenger in a canoe with students on that river. There may be times, unexpected situations and unrecognizable events when the teacher cannot fully control the class during the teaching of a lesson. While carrying out teaching activities through LS, a teacher has the opportunity to notice the issues that he/she missed in teaching activities thanks to the notes of teachers or experts who observe. This enables teachers to contribute to their own professional development and to discover different teaching practices (Dudley, 2013; Lewis and Tsuchida, 1998; Lewis, Perry, Friedkin and Roth, 2012).

Within the scope of LS, teachers (who work in collaboration, observe lessons, observe other teachers' classroom practices, and try to make the post-teaching activities more efficient by discussing) aim to contribute to their own professional development (Dudley, 2013). In line with these objectives, especially in Japan, a regional and national LS is applied (Fujii, 2014). This model, which has been implemented outside of Japan recently, has aroused worldwide interest in teacher professional development (Saito and Atencio, 2013). The number of studies on LS has increased dramatically, especially in the USA, England, Japan, Singapore and China (Angelini and Alvarez, 2018; Aykan and Kıncal, 2016; Barber, 2018; Cheng and Lee, 2011; Doig and Groves, 2011; Gonzalez and Deal, 2017; Lee, 2008; Kim, 2019; Lewis and Tsuchida, 1997; Lewis, Perry and Murata, 2006; Lewis, Perry and Hurd, 2009; Puchner and Taylor, 2006). Considering the statement *no country is an island alone* (Ornstein and Hunkins, 2004, p.448), our country needs to take its own lessons from these developments in the globalizing world. This model is worth investigating as it is one of the main factors of success in the countries that are particularly successful in international examinations.

Following current professional development models is quite important in order for pre-service teachers to have a more qualified undergraduate education in their professional sense. In this context, LS has increased in importance in terms of professional training of pre-service teachers and teachers (Günay, Toy and Bahadır, 2016). Carlo, Braga Blanco and Fueyo (2018) underlined that LS had a very promising potential especially for the professional development of prospective teachers in higher education. Kotelawala (2012), Lieberman (2009) and Dudley (2011) found that LS was a powerful model that improved teachers' learning-teaching activities. Kanauan and Insprasitha (2014) stated that the collaboration in the implementation of the model provided teachers with many professional gains Studies investigating this model (which has started to be known and applied in our country in recent years) are mostly conducted with the teachers while there is a dearth of research carried out with pre-service teachers. It will be inevitable that pre-service teachers who have the opportunity to receive education within the framework of an effective and high quality professional development program will have a more productive professional life. Thus, it is vital that pre-service teachers adopt a continuous professional development culture during the undergraduate education. In particular, pre-service teachers' planning a lesson in collaboration with other pre-service teachers and implementing that plan effectively will contribute to their professional development. Thus, pre-service teachers should be provided with opportunities during the undergraduate education, such as planning a lesson in collaboration, implementing the designed plan, observing the lesson during the implementation, and analyzing these activities after the lesson.

The main purpose of this study was to examine LS within the scope of professional development. To achieve this goal, the following questions were sought;

1. What is the effect of LS on the knowledge and skills of pre-service teachers regarding planning lesson?

2. What is the effect of LS on the knowledge and skills of pre-service teachers regarding teaching methods and techniques?
3. What is the effect of LS on the knowledge and skills of pre-service teachers regarding course evaluation?
4. What is the role of collaboration in LS on pre-service teachers' professional development?
5. What are the difficulties faced in LS process?
6. How can LS be implemented better?

## Method

### Research Design

The research adopted a single case study, one of the qualitative research methods. The case study, which is one of the qualitative research designs, aims to explain a situation in depth with the information and findings to be obtained from multiple data sources. On the other hand, the single case design aims to make a detailed and in-depth research on phenomena such as a program, a group or a school and to make an explanation with a holistic framework (Creswell, 2007; Newby, 2010; Yin, 2003). Figure 2 presents the study process.

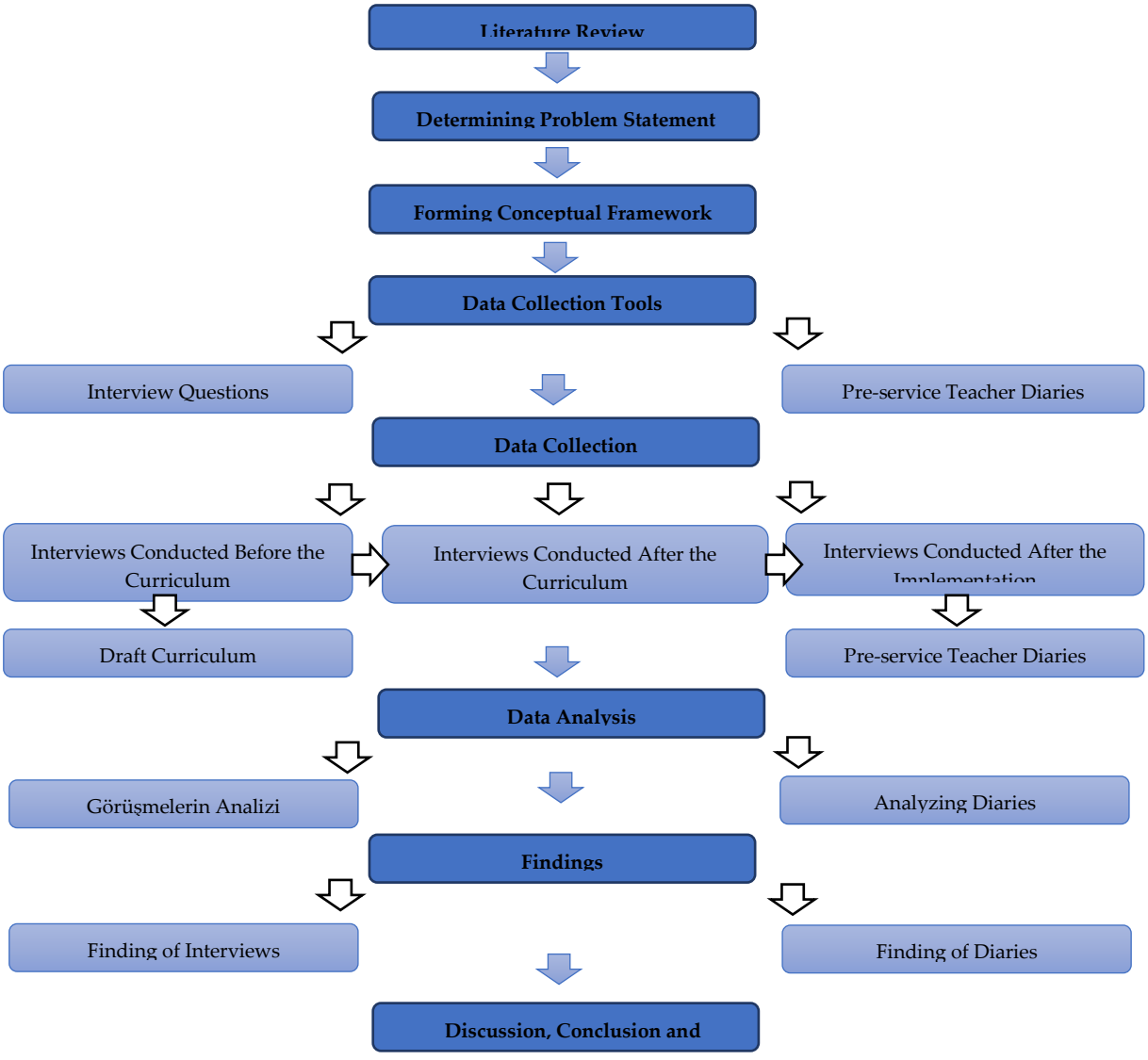


**Figure 2.** The Process of the Study

As is seen in Figure 2, the research process started with literature review and continued with the determining problem statement and the forming conceptual framework. Then, interviews were conducted with pre-service teachers before the curriculum. Following these interviews, draft curriculum of LS was prepared. With this program, LS was introduced and interviews were conducted after the program. A four-week program was conducted with pre-service teachers in elementary school 4th grade math class within the scope of teaching practice course. After each practice, pre-service teachers completed their diaries. At the end of practice, pre-service teachers were interviewed. Then, data were analyzed. After the findings obtained from the studies were synthesized, the discussion, conclusions and recommendations section of the research was formed.

**Study Group**

Criterion sampling, one of the purposeful sampling methods, was used. Purposeful sampling, which aims to provide in-depth understanding, allows researchers to select participants who can provide rich data. Criterion sampling method makes it possible to select individuals, events or situations with certain qualifications (Merriam, 2009; Yıldırım and Şimşek, 2011). The main criteria were considered when recruiting participant: being senior student in Division of Classroom Education (Muş Alparslan University Faculty of Education) in the 2017-2018 academic year and having a grade point average (GPA) of 3.00 out of 4.00. Academic success criteria were set in order for students to be interested in the courses and to share professional information with their peers. As a matter of fact, it is seen that grade point average is used as a criterion in some studies conducted with pre-service teacher in the literature (Juhler, 2017; Kanauan and Insprasitha, 2013). The study was conducted with eight pre-service classroom teachers (four males and four females). The study was conducted with volunteer participants within the scope of Teaching Practice II course.

**Data Collection**

Data collection tools were semi-structured interview forms and pre-service teacher diaries. Figure 2 presents data collection process.

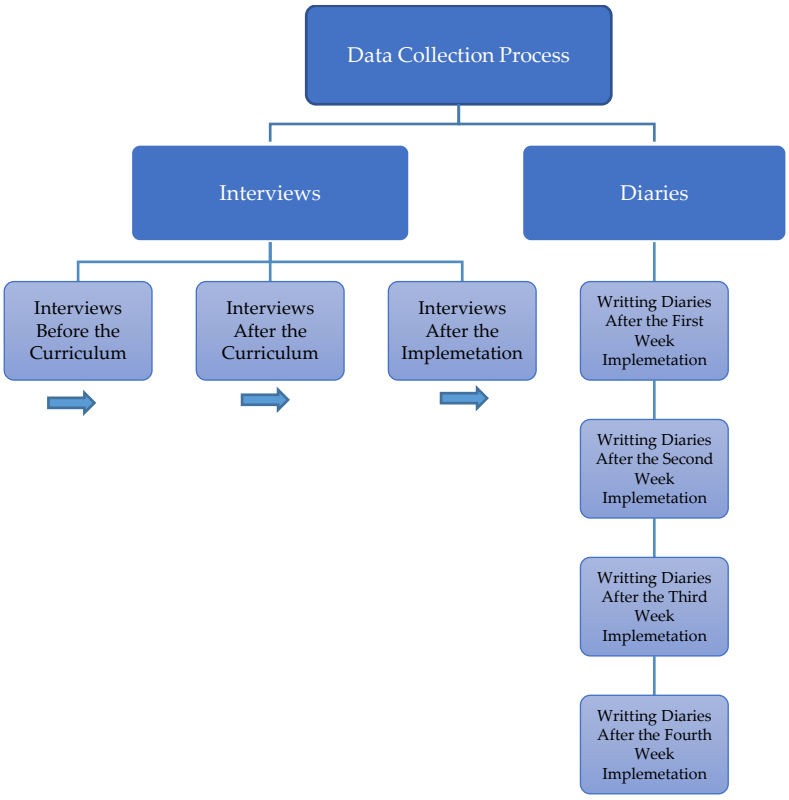


**Figure 3.** Data Collection Process of the Study

As is seen in Figure 3, data were obtained through interviews and diaries. Interviews were conducted at three different intervals and in three different contexts. First, pre-service teachers were interviewed. After introducing LS to pre-service teachers, they were interviewed before the implementation of the program. Then, LS was introduced to pre-service teachers, and they were interviewed after the implementation of the program. Finally, after the implementation of LS, interviews were conducted with pre-service teachers. During the implementation of LS process, data were collected through pre-service teachers' diaries after each implementation.

**Data Analysis**

The current study adopted content analysis. The participants were labelled as PT1, PT2, PT3… PT8. Each interview was recorded with a voice recorder and saved separately on a computer. In addition, the data obtained from pre-service teacher diaries were transferred to the computer in the same way without any intervention. Data were coded based on an inductive understanding. This process was carried out by two different encoders. After the codes were compared, compatible codes were determined while incompatible codes were discussed. In the analysis performed by two different coders, it was determined that the data of the first three weeks were repetitive; therefore, only the fourth week of the teacher diaries were analyzed.

**Validity and Reliability of the Study**

In order to increase the quality of qualitative research, different concepts were used instead of *validity* and *reliability* concepts. Considering validity, *credibility* and *transferability* were used instead of *internal validity* and *external validity* respectively; regarding reliability, *dependability* and *confirmability* were used in the place of *internal reliability* and *external reliability* respectively (Yıldırım and Şimşek, 2013). To increase credibility of data, triangulation and member checking were applied, long-term interaction was established between researchers and participants; and expert opinions were obtained at each stage of the research. To increase the transferability, purposive sampling method was used and detailed description was made. To ensure dependability, the coding of two different encoders were compared based on the formula of Miles and Huberman (1994: 64) and it was found to be 83%. Incompatible codes were re-evaluated and a consensus was reached on these codes. To increase confirmability, the opinions and suggestions of field experts were applied. In addition, for ethics concerns, member checking was utilized, pseudonym (PT1) was used for each participant, and required permissions were obtained from the ethics committee and national education directorate.

## Findings

Findings were discussed under the headings: findings of semi-structured interviews and findings of pre-service teacher diaries. Findings of semi-structured interviews were categorized as findings of interviews before the program, findings of interviews after the program, and findings of interviews after the implementation. On the other hand, findings of the teacher diaries were evaluated under a separate title.

**Findings of Pre-Service Teacher Interviews**

The data were collected through a semi-structured interview form before LS curriculum draft. In this interview, pre-service teachers were asked various questions about teacher professional development, what they do while making a lesson plan, how they develop their knowledge and skills of teaching methods and techniques, how they develop course evaluation practices and how they collaborate professionally. The data were presented in Table 1.

**Table 1.** Findings of Interviews Before the Program

| Theme | Codes | Frequency (f) |
|---|---|---|
| Professional Development | Ways to ensure professional development | 13 |

| | | |
|---|---|---|
| | Perception of professional development | 7 |
| | Contribution of professional development | 5 |
| Preparing Lesson Plan | Paying attention to content | 15 |
| | Getting support | 10 |
| | Employing constructivism | 3 |
| Teaching Methods and Techniques | Making practice | 10 |
| | Researching | 8 |
| | Getting education | 6 |
| Course Evaluation Practices | Making practice | 11 |
| | Getting education | 7 |
| Professional Collaboration | Getting support through collaboration | 9 |
| | Collaboration areas | 9 |
| | Perception of collaboration | 4 |

Table 1 showed that pre-service teachers mainly emphasized ways to ensure professional development considering their perceptions of professional development. In particular, they stated that professional development could be provided from pedagogic formation courses, practicums, conferences, seminars, internet, and in-service training courses; they also underlined the importance of following developments and being open to developments. Here are some representative excerpts of participants: "*Teachers need to develop themselves in all aspects and they should be open to development. They should receive new knowledge and skills from experts or their peers, or from teachers around them*." (PT2).

Considering pre-service teachers' perceptions on preparing lesson plan, they gave priority to paying attention to content and getting support while planning. They highlighted the importance of various issues while making a good lesson plan, such as the order in the content of the plan, the opportunities of the school, the content of the subject, the individual differences of the students, the methods and techniques to be used, the use of materials and time. Some examples were provided blow: "*While making the lesson plan, I searched academic books. Taking into account our micro-teaching lessons, I tried to make a lesson plan by getting support from my peers (other pre-service teachers). At the same time, I tried to get information about our shortcomings by asking our mentors (teachers of the practicum schools) and supervisors*" (PT2).

Regarding perceptions of pre-service teachers on teaching methods and techniques, they emphasized making practice the most. Data displayed that they developed their knowledge and skills related to teaching methods and techniques from the observations and practices during the practicum. In particular, pre-service teacher who tried to overcome their deficiencies by consulting experienced teachers stated that they reinforced this theoretical knowledge by making practice. In this context, some expressions are as follows: "*This year we have school experience and teaching practice. When we go to school, we can join the classes of different teachers. Now, we are also teaching. We see different kinds of teachers. This helps me see how the child learns best*." (PT1).

When the data related to Course Evaluation Practices were examined, pre-service teachers were found to underline the importance of making practice the most. They observed the implementations of mentors' lesson evaluation and imitated them in this regard. Pre-service teachers (who received support from experienced teachers during the practicum) emphasized that applications such as drama, educational games and concept maps should be used within the scope of course evaluation practices. Here are some excerpts: "*I apply my mentor who is observing me during the lesson for my evaluation practices. For example, what are my shortcomings? What can I do? There may be things I don't notice; thus, my advisors can help me*." (PT2)

Regarding pre-service teachers' views on professional collaboration, the most emphasis was on getting support through collaboration and collaboration areas. They stated that they collaborated while making lesson plan, choosing methods and techniques, determining evaluation practices, preparing materials, and designing

activities. Pre-service teachers, who collaborated for peer assessment during the practice, emphasized that this process would be of great benefit for professional development. Some examples are as follows: "*I cooperate with other pre-service teachers… When necessary, we ask our supervisors at the university*." (PT3), "*For example, when I'm going to perform a lesson, I ask questions to my supervisor, classroom teachers, and counsellors*."

The data were collected through semi-structured interview forms after LS curriculum draft. They were asked about their views on LS, its contribution to their knowledge and skills of making a lesson plan, its contribution to their knowledge and skills of teaching methods and techniques, its contribution to their course evaluation practices, and its contribution to their skills of professional collaboration skills. The data obtained from these questions are presented in Table 2.

**Table 2.** Findings of Interviews After the Program

| Theme | Codes | Frequency (f) |
|---|---|---|
| Lesson Study Model | Advantages of the model | 15 |
| | Limitations of the model | 7 |
| Contribution of Model to Prepare Lesson Plan | Contribution in Practice | 14 |
| | Contribution in Theory | 4 |
| Contribution of Model to Teaching Methods and Techniques | Contribution in Practice | 14 |
| | Contribution in Theory | 8 |
| Contribution of Model to Course Evaluation | Contribution in Practice | 11 |
| | Contribution in Theory | 4 |
| Contribution of Model to Professional Collaboration | Professional effects | 10 |
| | Personality effects | 4 |

As is seen in Table 2, pre-service teachers put more emphasis on superior aspects of LS. They had a positive perspective towards LS. They stated that LS would be useful in terms of their professional development and emphasized that this model had many superior aspects. Pre-service teachers defined it as a comprehensive model which improved skills to make lesson plan, developed knowledge of methods and techniques, increased student achievement, contributed to classroom management and offered the opportunity to practice theoretical knowledge. Here are some examples: "*LS helps us implement our theory knowledge into practice.*" (PT2)

Pre-service teachers focused on how mastering LS would help them implement a plan. They stated that the knowledge of LS would be useful especially while implementing lesson plan. Data indicated that LS would save time and effort while implementing lesson plan, provide the opportunity to see theory in practice, help know student better, provide a more active learning environment and thus increase the efficiency. "*When I apply LS, I go over what I have already learned. I also witness how theory reflects in practice*." (PT1)

Pre-service teachers believed that learning LS would contribute to them while applying their knowledge and skills of teaching methods and techniques. They advocated that learning LS would be beneficial in terms of choosing student-oriented teaching methods and techniques, observing practice of methods and techniques, using time well, increasing professional productivity and evaluating their own practices. "*I get information about the best method and technique. I can observe its implementation. I can use another method immediately if the one (I used) does not work. I keep trying until I get the best one.*" (PT1)

As can be understood from the statements of pre-service teachers, LS had important contributions to the evaluation work, especially during the practice. It was stated to be beneficial in observing the evaluation practices during the course, detect deficiencies, learn different evaluation practices, and evaluating of both process and outcome together. "*We don't have much information about evaluation, but with the feedbacks from other friends, we can constitute an evaluation process in which all students can present their knowledge*." (PT6)

Perceptions of pre-service teachers displayed that learning LS would provide a more efficient and qualified collaboration. Particularly, professional collaboration within the scope of this model would provide the opportunity to benefit from experienced teachers, to create a more qualified lesson plan, to choose the appropriate methods and techniques, to have a good classroom management, to use the time effectively and to determine the efficient evaluation practices. "*In fact, LS refers to teachers' preparing a plan in collaboration. The teacher used to prepare and implement plans that were prepared traditionally. However, thanks to LS, the plan is prepared or the deficiencies are corrected during the implementation so as to re-create it. This increases collaboration and solidarity*." (PT4)

After the implementation of LS, data were collected through a semi-structured interview form. Pre-service teachers were asked to express their opinions about LS, its contribution to the knowledge and skills that model requires for making lesson plan, to the knowledge and skills of teaching methods and techniques, to the course evaluation practices, and to the professional collaboration skills. In addition, in this process, the answers to the questions about the difficulties encountered in applying LS and how this model could be applied better were sought. The data obtained from these questions are presented in Table 3.

**Table 3.** Findings of Interviews After the Implementation

| Theme | Codes | Frequency (f) |
|---|---|---|
| Professional Effects of Model | Effects on knowledge and skills | 17 |
| | Effects on personality structures | 8 |
| Effects of Model on Preparing Lesson Plan | Effects in practice | 22 |
| | Effects in theory | 7 |
| Effects of Model on Teaching Methods and Techniques | Effects on theoretical knowledge | 12 |
| | Effects on practice skills | 5 |
| Effects of Model on Course Evaluation | Effects on practice skills | 8 |
| | Effects on theoretical knowledge | 8 |
| Effects of Model on Professional Collaboration | Effects on professional development | 15 |
| | Effects on teacher personality | 3 |
| Difficulties in Implementing Model | Non-teacher-based difficulties | 13 |
| | Teacher-based difficulties | 5 |
| How to Apply the Model Better | Recommendations for teachers | 8 |
| | Recommendations for executives | 7 |

When Table 3 was examined, pre-service teachers stated that the implementation of LS contributed to their professional knowledge and skills. In other words, applying LS gave them the opportunity to develop themselves in terms of professional knowledge and skills. Stating that they had the opportunity to develop and reinforce their professional knowledge owing to this model, pre-service teachers emphasized that they achieved significant outcomes regarding practices such as preparing lesson plans, implementing methods and techniques, evaluating lessons, and managing classroom. "*LS reinforces and enhances professional knowledge*." (PT1).

Regarding the opinions of pre-service teachers, LS helped them develop professionally in terms of skills to implement the lesson plan. In addition, skills such as attention, motivation and awareness developed in a positive way during the implementation process. In addition, pre-service teachers emphasized that their skills such as recognizing individual differences, using time effectively, and classroom management improved during the implementation process; and the collaboration provided a great advantage. "*We comprehend which steps we should pay attention to when planning the lesson. We have reinforced our existing knowledge and subjects we have learnt at the university"* (PT1).

Considering the opinions of pre-service teachers, implementing LS contributed to knowledge and skills of the teaching methods and techniques significantly. Pre-service teachers stated that they reinforced their knowledge of teaching methods and techniques that they learned at the university thanks to activities within the scope of this model; and they also emphasized that they were aware of new and different teaching methods and techniques. Additionally, they advocated that they managed to go beyond the stereotyped understanding of teaching methods and techniques. "*In general, we prefer to use the stereotyped methods and techniques we have learned. Because other methods and techniques are very risky and we do not know how we can get efficiency. However, we have learned different methods and techniques with other friends in accordance with the structure of the subject.*" (PT6)

Data asserted that LS developed knowledge and skills of pre-service teachers regarding course evaluation. Pre-service teachers noticed the crucial role of lesson evaluation and learned different evaluation practices during the implementation of the model; they also emphasized the necessity of evaluating the process and outcome collaboratively. In addition, they realized the importance of giving feedback to students and making a fair evaluation during the evaluation. "*We have made evaluation methods that seem to be inapplicable at all. Among evaluation methods, I witnessed collaborative evaluation methods."* (PT1)

Pre-service teachers emphasized that the collaboration in LS contributed significantly to their professional development. They stated that the collaboration developed their professional knowledge and skills such as reinforcing their knowledge, sharing their experiences, working for common success, observing different implementations, and creating an original plan. "*It helps me be open to different ideas and thoughts.*" (PT2).

Considering the difficulties pre-service teachers encountered while applying LS, pre-service teachers focused on non-teacher based difficulties. They complained about lack of time especially when applying the model and stated that they faced a number of difficulties such as class size, lack of meeting rooms and cost. Also, they emphasized that teachers might be inexperienced and unwillingness while implementing the model; therefore, they might not follow the lesson plan appropriately. "*When we first applied this model, we faced time-related problems.*" (PT1).

When the statements of pre-service teachers were examined, it was noted that they made some suggestions about teachers and administrators for better implementation of LS. They underlined the importance of working with experienced teachers. Thus, it would be possible to share different professional experiences. In addition, those who recommended the introduction of LS to the whole country through in-service trainings underlined the importance of receiving assistance from experts in this regard. "*In order to implement the model better, not only pre-service teachers but also other teachers (junior teachers, senior teachers) should be involved in this process*." (PT2).

**Findings of Pre-Service Teacher Diaries**

Pre-service teachers applying LS filled the pre-service teacher diary form after their practices. Data collected through this form displayed the contribution of LS to making lesson plan, teaching methods and techniques, evaluating lesson, professional collaboration and professional development. The findings obtained on the basis of these data are presented in Table 4.

**Table 4.** Findings Related Diaries of Pre-Service Teachers

| Theme | Codes | Frequency (f) |
|---|---|---|
| Contributions of Model on Preparing Lesson Plan | Contributions in terms of knowledge | 10 |
| | Contribution in terms of skill | 7 |
| Contributions of Model on Teaching Methods and Techniques | Contributions to theoretical knowledge | 9 |

| | | |
|---|---|---|
| | Contributions to practice skills | 6 |
| Contributions of Model on Course Evaluation | Contributions to practice skills | 8 |
| | Contributions to theoretical knowledge | 4 |
| Contributions of Model on Professional Collaboration | Contributions to teaching skills | 8 |
| | Contributions to personality structure | 6 |
| Contributions of Model on Professional Development | Professional contributions | 10 |
| | Contributions in terms of personality | 5 |

As is seen in Table 4, pre-service teachers emphasized that learning and practicing LS contributed to their knowledge about lesson plan positively. Pre-service teachers (who claimed to comprehend the steps to be kept in mind and the order to be followed when planning a lesson) stated that they had the opportunity to benefit from the ideas and suggestions of their friends in this process. They also underlined that they learned to look at a lesson plan critically and realized the importance of preparing a plan according to students' level: "*Especially, I have learned better what to pay attention to when planning a lesson*." (PT4).

Pre-service teachers stated that learning and applying LS positively contributed to both theory and practice of teaching methods and techniques. Pre-service teachers stated that they learned different teaching methods and techniques during the implementation of LS; and they warned that different methods and techniques should be used for different subjects. In addition, they indicated that they found opportunity to reinforce their knowledge of methods and techniques during course evaluation meetings and to realize and eliminate their shortcomings in this regard: "*While applying them together with different methods and techniques, I gained ideas about how to present the classroom atmosphere and subject in the most appropriate way*." (PT5)

Considering the opinions of pre-service teachers, LS contributed to their evaluation skills positively. Those whose course evaluation practices were observed by their peers had the opportunity to learn their shortcomings in course evaluation meetings. Initially, pre-service teachers stated that they made result-oriented evaluation; later, they used a process-oriented evaluation style: "*I caught the points I missed while evaluating the lesson thanks to friends. This helped me develop more*." (PT8)

Regarding opinions of pre-service teachers, collaboration in LS contributed to their teaching skills and personality structures positively. They learned to create a more qualified lesson plan, to apply different methods and techniques and to use effective evaluation practices. They stated that they could realize many points they missed during the course through collaboration and learned how to create a more effective learning environment in this process. In addition, they declared that their discussion skills developed in this process and they started to produce original ideas: "*We have become more competent to come together each week to produce many ideas about collaboration. We came together and put forward more challenging ideas. We've made better plans. Every week we came together with different and multiplying ideas. I have once again witnessed the importance of collaboration*." (PT3)

It is understood from opinions of pre-service teachers that LS contributed positively to their knowledge and skills in the professional sense. Pre-service teachers (who noticed the importance of lesson plan and comprehended what they should pay attention to while making lesson plan) noticed the effects of using different methods-techniques and different evaluation practices on the course environment. They asserted that this process let them know how a lesson could be more fun and productive in line with different ideas and suggestions and they highlighted the necessity of collaboration rather than competition: "*I understand the importance of lesson plan. While preparing a plan, I grasped how students' prior knowledge and thoughts are crucial for*

*the subject. While dealing with several students, I paid attention to other students too and how I could assign tasks to them. These factors enhanced my professional development*." (PT1)

## Discussion and Conclusion

In this section, the contribution of LS to the knowledge and skills of pre-service teachers on the basis of lesson plan, teaching methods-techniques and course evaluation was discussed. In addition, the contribution of professional collaboration to pre-service teachers was examined. This chapter also delved into the difficulties encountered during the implementation of LS and solutions to implement it better. Therefore, findings were analyzed by comparing them with the findings of the studies in the literature.

According to pre-service teachers, professional development can be developed through pedagogic formation courses, practicum schools, seminars and conferences, internet and in-service trainings. They stated that new and different practices related to professional development should also be followed. They advocated that learning and practicing LS, which has attracted worldwide attention especially in the context of teacher professional development in recent years (Dudley, 2013; Saito and Atencio, 2013), developed them in a professional sense. Pre-service teachers who learned and applied LS declared in their diaries that the model made significant contributions to their professional development and personality structures. They also emphasized that this model supported them in terms of making lesson plan, knowledge of methods and techniques, course evaluation knowledge and collaboration skills. They also informed that LS contributed greatly to the consolidation and development of their professional knowledge and skills.

The fact that LS aimed at ensuring the professional development of teachers and providing continuity to this process is considered as the most important factor in reaching these findings. This model is thought to provide a qualified professional development environment in addition to professional cooperation and assistance in the implementation process. As a matter of fact, researchers observed that pre-service teachers had a positive attitude while learning and applying LS. Additionally, researchers noted that this positive working environment provided a lot of professional gains for pre-service teachers. Initially, they had some concerns as they did not know LS, but after recognizing and applying the model, these worries were replaced by a positive and fun environment. In particular, while observing in lessons and during course evaluation meetings, pre-service teachers working in collaboration learned new and different professional practices from their friends during this process. Researchers observed that this process helped pre-service teachers closely witness and critically follow the application forms of theoretical professional knowledge that they already know.

This study presented the positive contribution of LS to the professional development of pre-service teachers. These findings confirm literature. Similar findings were found by Yoshida (1999) who first used LS in doctoral dissertation, Stigler and Hiebert (1999) who enabled the model to be recognized in the United States and around the world, and Dudley (2011) who provided the implementation of this model within the UK ministry. Carlo, Braga Blanco and Fueyo (2018) underlined that LS had a very promising potential especially for the professional development of prospective teachers in higher education. Barber (2018), Gonzalez and Deal (2017) and Tan (2014) concluded that LS provided both professional development and encouraged teachers in this sense. Juhler (2017), Mitchell (2017) and Baki (2012) stated in their doctoral dissertations that LS contributed to the professional development of pre-service teachers. In addition, Carroll (2013) emphasized that LS was an important model that strengthened the link between the theoretical and practical knowledge of prospective teachers.

Like findings of the current study, LS was found to improve teachers' professional competencies in the studies conducted with math teachers in China (Huang, Su and Xu, 2014) and Ireland (Brosnan, 2014). Copriady (2013) and Saito and Atencio (2013) concluded that LS made teachers more professionally qualified

in Indonesia. In addition, the studies conducted with the teachers in Thailand (Kanauan and Insprasitha, 2013), in the United States (Barber, 2018), in Denmark (Skott and Moller, 2017) and in Canada (Chassels and Melville, 2009) acknowledged that LS increased teaching skills. All these studies show that LS contributes positively to the professional development of teachers and pre-service teacher. Because LS offers an environment where professional knowledge and experience can be shared.

**Lesson Plan**

LS was found to improve the knowledge and skills of pre-service teachers regarding making lesson plan and implementing that plan. In their studies conducted with pre-service teachers, Mostofo (2014) and Carroll (2013) concluded that LS increased pre-service teachers' ability to make a better lesson plan and gave them self-confidence. Meiliasari (2013) detected that LS developed knowledge and skills of pre-service teachers regarding making lesson plans. In addition, Taylor et al. (2005) stated that LS contributed to knowledge and skills of teachers in terms of making lesson plans.

In dissertations carried out with teachers (Lyding, 2012) and pre-service teachers (Baki, 2012), LS was found to increase teachers' knowledge and skills of lesson plan. Aykan and Dursun (2020), Fernandez (2010) and Groves et al. (2013) emphasized that LS developed important teaching skills of pre-service teachers such as making and implementing lesson plan. In another study, Doğan and Özgeldi (2018) concluded that LS contributed to math pre-service teachers' skills related to lesson plan. The results coincide with the findings of the current study.

LS is a professional development model that involves teacher's planning lesson in collaboration, implementing it in the classroom, observing and then rearranging the plan through discussion (Alvine et al., 2007). LS is considered to be important for teachers to share their knowledge and skills with each other in terms of their professional development during LS process, which is carried out by bringing together teachers or pre-service teachers with different perspectives and different experiences. The process of applying the model provides pre-service teachers the opportunity to see and correct both the theoretical and practical aspects of the lesson plan. In this study, findings showed that LS was a model that develops knowledge and skills related to lesson plan. When all these studies are considered on the basis; LS, which enables many pre-service teachers to express different points of view while developing a lesson plan, contributes to pre-service teachers' skills to develop qualified lesson plans.

**Teaching Methods and Techniques**

When study findings were examined, LS was observed to make significant contributions to pre-service teachers' knowledge and skills of teaching methods and techniques. It was thought that the collaborative work environment enabled different methods and techniques to be shared with different knowledge and experiences. Literature supports the finding which advocated that making lesson plan in collaboration, observing the implementation, and then discussing and reorganizing lesson plan contributed to knowledge and skills of teaching methods and techniques. Alvine et al. (2007), Angelini and Alvarez (2018) and Meiliasari (2013) stated that LS made significant contributions to pre-service teachers' knowledge and skills of teaching methods and techniques both in theory and practice. Becker et al. (2008) and Fernandez (2010) also found LS improved teachers' competences in teaching methods.

Aykan and Dursun (2020), Barber (2018), Lyding (2012) and Yüzbaşıoğlu (2016) stated that teachers had the opportunity to learn and apply different methods and techniques thanks to LS. Kotelawala (2012), Lieberman (2009) and Dudley (2011) found that LS was a powerful model that improved teachers' learning-teaching activities. Additionally, in a study conducted by Barber (2018) in the USA, teachers' knowledge and skills of teaching methods and techniques increased after applying LS. These studies show that LS enables pre-service teachers to learn new and different method techniques with the collaborative environment it offers.

**Course Evaluation Practices**

Considering the research findings, LS improved the knowledge and skills of pre-service teachers within the scope of course evaluation practices. Studies supporting these findings are avaliable in the literature. In their study conducted in the UK and Norway Larssen, Cajkler, Mosvold, Bjuland, et al. (2018) concluded that LS provided teachers with different evaluation practices. Angelini and Alvarez (2018), Barber (2018), Copriady (2013) and Fernandez (2010) noted that LS improved teachers' ability to evaluate both the course and the students. Aykan and Dursun (2020), Bozkurt and Yetkin-Özdemir (2018) also emphasized that LS brought diversity to teachers' evaluation practices. In addition, Sims and Walsh (2009) stated that LS positively contributed to pre-service teachers' knowledge and skills of course evaluation. As a result, the findings obtained from all these studies coincide with the findings of the research.

While the process of applying the model provides an opportunity for pre-service teachers to learn about the different course evaluation practices of other pre-service teachers and to observe them in the classroom, it creates an environment in which they can recognize their shortcomings and weaknesses in their own practices. In this process, pre-service teachers who could joined the lesson had the opportunity to observe and note many situations that the teacher does not notice. That kind of observation during the lesson gave pre-service teachers the opportunity to see the efficiency of the course evaluation clearly. Thanks to the discussion activities done after the lesson, pre-service teachers had the opportunity to say their own ideas and suggestions and to learn the perspectives of their friends. Therefore, this information made it clear that the course research process contributed to the pre-service teachers' evaluation practices positively.

**Professional Collaboration**

The data exhibited that collaboration in LS process made significant contributions to the professional development and personality structures of pre-service teachers. This confirms various studies. Chen (2017), Kanuan and Inprasitha (2014), Taylor et al. (2005) stated that collaboration within LS provided the opportunity to share and learn best professional practices. Chong and Kong (2012) found that the collaboration LS process improved teachers professionally. Dudley (2011) stated that collaboration LS developed teachers' professional knowledge and practices while Mitchell (2017) emphasized that this collaboration brought continuity to the professional development of teachers. In addition, Scott and Moller (2017) concluded that collaboration in LS process increased teachers' tendency towards cooperation.

Kotelawala (2012) underlined that collaborative practices of LS let teachers and experts with different experience to benefit from each other in a professional sense. Demir, Czerniak and Hart (2013) and Kanauan and Insprasitha (2014) stated that the collaboration in the implementation of the model provided teachers with many professional gains. In addition, Dudley (2013) emphasized that, thanks to the collaborative lesson study practices, teachers' ability to recognize hidden activities during the course developed.

One of the most important factors of the results obtained from all these studies was that LS provides an interactive collaborative learning environment. That is, collaboration of pre-service teachers in order to create a lesson plan, implement the plan, observe the implementation, and then rearrange the lesson plan will contribute to them professionally. In this context, since a teacher can learn issues he/she could not realize during the lesson from his/her friends and examine these situations together thanks to collaboration in LS, they will develop professionally.

**Limitations of Lesson Study Model**

It is a known fact that there is reluctance against new practices in educational practices as in all areas of life and that change is not easy (Demir et al., 2013). In this study, pre-service teachers had some negative thoughts about the implementation of LS at first. They stated that it might be difficult for eight pre-service

teachers to manage a process together and they might encounter some limitations in terms of time, space, reluctance and inexperience. It was observed that those who faced the above-mentioned difficulties in the first week of the implementation overcame them owing to the experience gained in the second week. In the third and fourth weeks, pre-service teachers stated that they had overcome the difficulties in cooperating more effectively, using time effectively, and reluctance. They gained experience with the implementation of the model and started to apply the model in a more practical way. According to pre-service teachers, especially inexperience and unwillingness could be easily overcome with the recognition and implementation of the model. In addition, it was observed by the researcher that the initial anxious and timid attitudes of pre-service teachers were replaced by comfort and self-confidence.

The cyclical implementation process of LS may also cause problems such as extra time, cost and workload. Various studies underline the difficulties encountered when implementing LS (Chokshi and Fernandez, 2004; Lewis, 2009; Maitree, Masami and Ban-Har, 2015). Lampley, Gardner and Barlow (2018), who conducted a study with prospective teachers, stated that LS had some limitations in terms of time and the inexperience of the participants. Chassels and Melville (2009) studied with pre-service teachers in Canada and complained about time related difficulties. Similarly, Lampley et al. (2018), Demir, Czemiak and Hart (2013) stated that LS had some time related limitations.

The study conducted by Lee (2008) underlined the occurrence of extra workload for teachers due to LS. Aykan and Dursun (2020), Chen (2017) and Bozkurt (2015) emphasized that some teachers were reluctant to participate in the implementation of the model. Cheng and Lee (2011) warned that support from educational politicians and school administrators and the loyalty of teachers are vital for overcoming time and cost limitations. Demir, Czerniak and Hart (2013) emphasized the importance of showing successful practice examples and providing expert participation in order to minimize teachers' concerns about new practices such as LS. In addition, Günay et al. (2016) suggested the implementation of LS into courses such as school experience and teaching practice in undergraduate education and highlighted the necessity of gaining experience in this sense.

As stated in this research and in all other studies, the course research model has some limitations, as is the case with every professional development model. It was understood that pre-service teachers had some concerns about the limitations of applying the course research model before this study. It was observed that the pre-service teachers who knew the model in depth and started to apply it showed the ability to overcome some of the limitations they encountered within the scope of the model. After the research, it was observed by the researcher that pre-service teachers who gained significant experience within the scope of the model developed a positive attitude towards the model.

**How to Apply Lesson Study Model Better?**

As a result of the research, pre-service teachers made some suggestions for administrators and teachers for a better implementation of LS. Findings displayed that pre-service teachers emphasized the elimination of time and cost problems during the implementation of the model. Regarding teachers, pre-service teachers suggested the collaboration with teachers from different experiences during the implementation process; thus, different professional experiences can be shared.

The current study shared similar findings with literature in term of how to apply lesson study model better. Akbaba Dağ (2014), Günay et al. (2016) and Serbest (2014) defended the introduction of LS to in-service and pre-service teachers through in-service and pre-service trainings respectively. In their study, Godfrey, Seleznyov, Anders, Wollaston and Barrera-Pedemonte (2019) advocated that school administrations and administrators should solve time related problems during LS. In addition, Yuzbasioglu (2016) underlined that effective planning should be done especially in terms of time and environment where LS will be applied.

Alvine et al. (2007) stated that LS was an excellent model for sharing professional experience between young pre-service teachers and experienced teachers. In another study, Kanauan and Insprasitha (2014) emphasized the importance of applying LS with both pre-service teachers and in-service teachers. In the study conducted by Copriady (2013) with teachers in Indonesia, LS was found to provide the opportunity to share experiences between experienced teachers and other teachers. For better application of LS on the basis of all these studies; It is thought that preparing the necessary environments, planning the time well, and ensuring the participation of teachers and experts with different experiences will be beneficial.

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www.iojes.net

International Online Journal of Educational Sciences

ISSN: 1309-2707

# The Effect Self-Regulated Learning on Students' Academic Achievement: A Meta-Analysis

*Research Article*

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**To cite this article:** Oz, E. (2021). The effect self-regulated learning on students' academic achievement: a meta-analysis, *International Online Journal of Educational Sciences*, *13*(5), 1409-1429.

ARTICLE INFO

*Article History*:

Received:24.02.2021

Available online:27.10.2021

ABSTRACT

The aim of this meta-analysis study is to determine the effect of self-regulated learning on students' academic achievement. In this context, quantitative studies investigating the effects of educational interventions based on self-regulated learning on academic achievement at various levels of education between 2002 and 2020 were reviewed. In the completed meta-analysis, experimental studies including 26 independent interventions (1.799 participants) were collected and an estimated common effect size was calculated 0,728. This value shows that self-regulated learning has a medium level positive effect (Hedges' $g = 0.728$, % 95 CI [0.479-0.976], $p < 0.001$) on student achievement. Different effect sizes such as publishing location, publication year, grade level, course type, sample size and length of intervention were also reported for moderator variables. The results are discussed, together with their implications for future research and practices on the self regulated learning.



**Keywords:**
Self-regulated learning, Academic achievement, Meta-analysis

## Introduction

### Self-Regulated Learning

Contemporary learning approaches indicate that individuals should actively participate in the learning process as long as they are not passive receivers of knowledge. Although it is stated that the theoretical base of self-regulated learning emerged in line with this orientation was revealed in the studies carried out by William James in the last century, it was intensely studied in the last thirty years (Zimmerman, 2008). Self-regulated learning has been defined in different ways many times until today. Despite the differences in these definitions, researchers agree that self-regulation includes common components. For instance, Zeinder, Boekaerts, and Pintrich (2000) state that self-regulation includes cognitive, affective, motivational, and

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DOI: https://doi.org/10.15345/iojes.2021.05.008

behavioral components, while Schraw, Crippen, and Hartley (2006) describe that self-regulated learning consists of three main components as cognition, metacognition, and motivation. Considering these components, self-regulated learning can be defined as an active process in which students try to organize their cognition, motivation and behavior according to their learning goals (Pintrich, 2000, p. 453).

Self-regulated learning comprises more than the in-depth knowledge of a skill; therefore, it includes self-awareness, self-motivation, and behavioral skills that enable to put knowledge into practice appropriately and accurately. These skills can be identified as the learners' setting certain *goals,* adopting influential *strategies* in order to attain the goals, *monitoring* their performance, *restructuring* their physical and social environment according to their own goals, *managing their time* effectively, making *self-evaluation* in terms of their methods of learning, *attributing* causes to results, and *adapting* possible strategies to themselves. It has been found that the learning level of students varies depending on the presence or absence of these key self-regulated processes. In addition, recent research reveals that self-motivational traits of self-regulated learners depend on many underlying considerations including perceived self-efficacy and intrinsic interest (Zimmerman, 2002).

**Students as Self-Regulated Learners and Academic Achievement**

Learners who have self-regulated learning skill proactively approach tasks for academic achievement and set their own goals and invent their own strategies by benefitting from prior knowledge and clues in learning environment (Pintrich, 2000; Zimmerman & Moylan, 2009). In addition, students undergo three phases in self-regulated learning process: forethought, performance, and self-reflection (Zimmerman, 2002). In the forethought phase, which is a preparation step, students prepare for the learning task at hand, plan their studies and set goals. During the performance phase, students practice cognitive strategies to learn about the material at hand, monitor their learning, organize learning strategies, and use their sources (e.g. time and assistance) in the most efficient manner. Finally, in the evaluation phase, students reflect on their learning and determine which strategies are effective and what they will be able to do differently next time (Zimmerman, 2002). These strategies formed based on self-regulated learning theory create a roadmap for individuals who try to achieve academic success by gaining self-regulated learning skill.

Students can evaluate themselves in order to see whether there is a progress in their learning, or not, through learning strategies. They can determine learning goals and plan for attaining these goals. They can also decide on and regulate the conditions for studying by trying to obtain information for their studies from various sources. They can choose to reinforce or punish themselves if they succeed or fail. In addition, students can seek help from peers or other adults when they need and they can read and update their notes on their previous studies (Zimmerman, 2000). All these processes were turned into a list of strategies by Zimmerman and Martinez-Pons (1986) as *self-evaluation, organizing and transforming, goal setting and planning, seeking information, keeping records and monitoring, environmental structuring, self-consequence, rehearsing and memorizing, seeking help, updating records, and other strategies.* Similarly, Pintrich (1999) divided self-regulated learning strategies into three as cognitive learning strategies, metacognitive strategies, and resource management strategies.

Students with self-regulated learning skill choose the most effective cognitive learning activity depending on the current learning task (Winne & Hadwin, 1998). Students' self-regulated learning activities thereby influence their cognitive activities (Nelson & Narens, 1994), and students actively self-regulating their learning engage in more effective cognitive strategies. Students' success during learning is the result of that they use cognitive strategies (Dunlosky, Rawson, Marsh, Nathan, & Willingham, 2013). This progress is used as input for further self-regulation through monitoring. Therefore, the use of self-regulated learning and cognitive strategies creates a cyclical process during learning (Nelson & Narens, 1994).

**Aim of the Research**

The question of what the formula of effective learning and academic achievement is has attracted the attention of educational researchers for decades (Winne, 2005). One of the concepts introduced in this context is self-regulated learning. Self-regulated learning has become one of the most common theories in education which explains student achievement since it includes many variables related to learning such as goal orientation, task-related strategies, metacognitive strategies, and association theory (Panadero, Jonsson & Botella, 2017).

The mutual and complex relationship between self-regulated learning and academic achievement has been the subject of many studies in Turkey and abroad (Azevedo & Cromley, 2004; Azevedo, Cromley, & Seibert, 2004; Bannert, Hildebrand, & Mengelkamp, 2009; Broadbent & Poon, 2015; Corsale & Ornstein, 1980; Kluwe, 1982; Lopez, Little, Oettingen, & Baltes, 1998; Nietfeld, Cao, & Osborne, 2006; Stark & Krause, 2009). Studies show that the effectiveness of self-regulated learning on academic achievement varies by different factors (Hadwin, Winne, Stockley, Nesbit, & Woszczyna, 2001; Zimmerman & Martinez-Pons, 1990). From this point of view, meta-analysis method which enables studies to be viewed from a general perspective, to group similar studies under certain themes in order to make inferences, and to interpret the resulting quantitative findings on a common ground (Dinçer, 2014) was used. Thus, the present study aims to determine the general effect of educational interventions based on self-regulated learning on academic achievement. With the data obtained from this research, it is aimed to reach a more precise decision about the subject, to make clearer predictions and generalizations about the future for researchers and policymakers.

Meta-analysis studies conducted for examining the effect of self-regulated learning on academic achievement are present in the literature (Boer, Donker-Bergstra, Kostons, & Korpershoek, 2013; de Bruijn-Smolders, Timmers, Gawke, Schoonman, & Born, 2016 ; Dignath & Büttner, 2008; Dignath, Büttner & Langfeldt, 2008; Ergen & Kanadlı, 2017; Sitzmann & Ely, 2011). However, relevant meta-analysis studies differ from this study since most of them do not cover the studies conducted in Turkey and in terms of moderator variables examined within their scope. Studies conducted in Turkey and in other countries were compared in this study. The fact that the theoretical framework of self-regulated learning is based on the research conducted abroad requires this comparison to be made. For this reason, the author reviewed 26 studies including educational interventions based on self-regulated learning that were conducted between 2002 and 2020. The review addressed the following research questions.

RQ1: What kind of effect do the intervention studies based on self-regulated learning have on academic achievement?

RQ2: Do the effect sizes of intervention studies based on self-regulated learning on academic achievement differ according to moderator variables?

## Methods

A meta-analysis was conducted to investigate the effect of educational interventions based on self-regulated learning on academic achievement and details of the process were presented below.

**Selection of Studies Included in the Research**

The first literature review for studies to be included in the meta-analysis was carried out in March of 2020 through Google Academic, TR Index, ERIC, PsycINFO and ProQuest databases. The reason why the mentioned databases were chosen is that they mostly include relevant studies at national and international level and meet the accessibility criteria. The results of the first search made on these databases were kept broad in scope so that there could not be any lack in the relevant literature review. However, the subsequent searches were conducted on various keywords due to the conceptual structure of self-regulated learning, differences in

terminology, and the frequency of studies carried out by combining many different variables and methods. These keywords are *self-regulated learning + achievement*, *self-regulation + achievement, self-regulated learning + academic achievement + self-regulated learning + achievement + experimental, self-regulated learning + achievement + intervention, self-directed learning + achievement, self-directed learning + achievement + intervention.* Reference lists of experimental and review articles were also examined for additional search. A second search was conducted in October of 2020 by using the same keywords and databases in order to include the relevant studies recently published on the subject. Studies and the titles and abstracts of studies listed as a result of the literature review conducted through the keywords were reviewed according to the categories and the studies which did not meet the predefined criteria were not included in the study.

**Table 1.** Inclusion and exclusion criteria

| Category | Inclusion criteria | Exclusion criteria |
|---|---|---|
| Language | Turkish and English | Languages other than Turkish and English |
| Type of Publication | Peer-reviewed journal, thesis | Book, chapter, report |
| Research Objective | The effect of self-regulated learning in the context of achievement | The effect of self-regulation in the context of various variables |
| Method | Quantitative | Qualitative |
| Research Design | Experimental | Survey, correlational research, etc. |
| Sample | Standard sample (Primary, secondary, high school and university students) | Students receiving special education, students with low or high performance, disadvantageous students |
| | Control group | Nonexistence of control group |
| Implementation | Educational intervention directly for self-regulated learning | Educational intervention indirectly for self-regulated learning |
| Data Collection Tool | Scales to measure self-regulated learning directly<br>Achievement test | Scales to measure self-regulated learning indirectly<br>Different instruments of assessment |
| Data Analysis | Calculation of standard deviation, arithmetic mean, and effect size | Nonexistence of calculation of standard deviation, arithmetic mean, and effect size |

Relevant studies included in the determined databases were filtered according to the inclusion and exclusion criteria in Table 1. Language of publication, type of publication, research objective, method, research design, sample, implementation, data collection tool, and data analysis were taken into consideration in these criteria. While determining the studies which would be included in the meta-analysis, the most common reasons for exclusion were that studies had a context other than self-regulated learning and academic achievement, did not provide data appropriate to meta-analysis, and were mainly relational studies with a focus of intervention different than the improvement of self-regulated learning. Special attention was paid to the availability of statistical information required to calculate effect sizes in studies.

Studies that meet the inclusion criteria may include data about one or more variables due to the multidimensional nature of self-regulated learning. Studies containing data on more than one variable were included in the meta-analysis since they provided sufficient information. In addition, studies may involve multiple study groups or multiple effect sizes. For instance, one study may evaluate more than one self-regulated learning activity and individually relate each to the academic achievements of students. However, in case the relevant studies involved the processes of intervention to improve only a part of self-regulated learning (e.g. self-efficacy, motivation, and etc.), they were excluded from the meta-analysis (Figure 1).

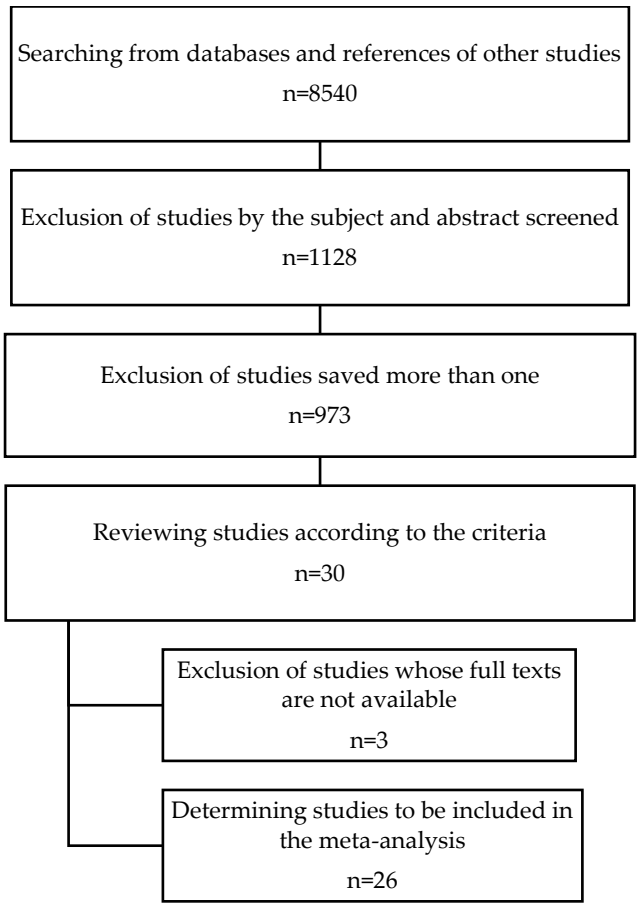


**Figure 1.** Flowchart of the search and screening process

As a result of the literature review conducted based on the determined criteria, the full texts of 26 studies that were agreed to be included in the study were accessed and the studies were included in the meta-analysis.

**Coding of Studies Included in the Meta-Analysis**

In addition to the effect size results in meta-analysis studies, it is also important to investigate the relationships between the effects of research and the study characteristics related to intervention. Therefore, several other variable categories should be examined along with effect size coding (Wilson & Lipsey, 2000). Summary of variables related to the meta-analysis was presented below (Table 2).

**Table 2.** Variables related to meta-analysis

| Independent Variables | Moderator Variables | Dependent Variable |
|---|---|---|
| Experimental intervention carried out for students to acquire self-regulated learning skill | Place of Study | Academic Achievement |
| | Year of Study | |
| | Grade Level of the Sample Group | |
| | Field of Science of the Study | |
| | Sample Size | |
| | Length of Intervention / Week | |

Necessary information from each of the studies included in the meta-analysis was collected by publication coding form in order to carry out the analyses related to the variables in Table 2. Publication coding form includes general information about the research (author information, publication year, place of publication), information about the sample (number of participants, grade level), intervention (subject area, research method, data collection tool) and research results. The place of publication was coded as domestic and foreign, the year in which the study was conducted as five-year periods and the grade level of the sample

group as primary school, secondary school, high school, and university. As well as the sample size, the length of intervention grouped on the basis of participants and weeks were also recorded in the publication coding form.

In order to provide the reliability of the coding, coding of the research included in the meta-analysis should be carried out by at least two coders (Wilson, 2009). Evidences show that the process of coding each study twice independently and resolving the discrepancies in coding by discussing produces highly reliable data (Rosenthal, 1979). For this reason, the studies were also coded by another expert during the study. The initial percentage of agreement on coding between the coders was high and the discrepancies were resolved by discussions between the coders.

**Data Analysis**

The effect size values and combined effect size of the studies included in the meta-analysis were calculated by the CMA v3.0 (Comprehensive Meta Analysis Software) program. All p-values reported are two-tailed, unless specified.

Prior to the evaluation of the findings, it is useful to explain the selections made in the analysis of the data. In this sense, the selections made in the meta-analysis process are as follows:

**Fixed and Random Effects Models**

Two main models are encountered in selecting the model to be employed in the meta-analysis. These are Fixed Effect Model and Random Effect Model. Specific criteria and prerequisites for the scope of the study should be taken into consideration when deciding which model is to be selected in data analysis (Borenstein, Hedges, Higgins & Rothstein, 2011; Cooper, Hedges, & Valentine, 2019; Hedges & Olkin, 2014; Littell, Corcoran & Pillai, 2008). In the fixed effect model, it is assumed that the standard deviations of the studies are equal to zero since the population sizes of the studies are same. In the random effect model, on the contrary, the standard deviation is considered to be different from zero due to the difference in population sizes. This can be easily determined by a statistical test for heterogeneity (Dinçer, 2014). As a result of the test of heterogeneity, if the effect sizes do not indicate a heterogeneous distribution, the fixed effect model is an appropriate choice, and if a heterogeneous distribution is indicated, then it is recommended to use the random effect model (Ellis, 2010).

Cochrane's *Q* statistic to assess heterogeneity of the effect sizes for statistical significance and the $I^2$ value to indicate the level of heterogeneity in an interpretable way are used (Borenstein et al., 2011). $I^2$ values of 25%, 50%, and 75% can be considered as low, moderate, and high heterogeneity, respectively, and this indicates the presence of potential moderators (Higgins, Thompson, Deeks & Altman, 2003).

**Effect Size Value**

Standardized mean differences (SMDs) were chosen as the effect size index for this meta-analysis in order to examine the academic achievement differences resulted from the interventions based on self-regulated learning in the experimental and control groups. SMD indexes are typically used for opposite group comparisons. The better-known effect size indexes are Cohen's *d*, Hedges' *g*, and Glass' Δ. Hedges' *g* effect sizes for this meta-analysis were calculated by the CMA program. Hedges' *g* is the variation of Cohen's *d* which corrects for the bias arising in Cohen's d because of the small sample sizes (Hedges & Olkin, 1985) and is particularly useful for meta-analysis of studies with varying sample sizes (Korpershoek, Harms, de Boer, van Kuijk & Doolaard, 2016). Hedges' *g* is interpreted as small (g>0.3), medium (g>0.5), and large (g>0.8) (Hedges & Olkin, 1985). When there were no mean and standard deviation reported in the studies included in the meta-analysis, standardized mean difference was estimated by using various sources including *t*-tests, *z*-scores, and *F*-values (Borenstein et al., 2011).

**Publication Bias**

Publication bias occurs when researchers publish only positive results (Borenstein et al., 2011). Since there is no formal statistical test to assess the presence and impact of publication bias, it is recommended to combine several individual analyses (Banks, Kepes & Banks, 2012; Borenstein et al., 2011). In this study, firstly, a funnel plot (Light & Pillemer, 1984) and trim-and-fill (Duval & Tweedie, 2000) method, and the fail-safe N (Rothstein, Sutton & Borenstein, 2006) value were examined to control publication bias.

Funnel plots compare effect sizes with standard errors. They provide a graphical tool useful for assessing whether treatment effects deteriorate, or not, because of publication bias (Egger, Schneider & Smith, 1998). With the trim-and-fill method, a symmetrical funnel plot is obtained by trimming the extreme effect sizes of the interventions on the right-hand side of a funnel. In this way, a new, unbiased estimate of summary effect size is calculated. The funnel plot is then refilled with the trimmed effect sizes of the interventions and with their counterparts (missing interventions) on the left-hand side of the funnel plot. A pooled estimate of the summary effect size is then calculated. Results from studies that have smaller sample sizes scatter at the bottom and the spread narrows among larger studies. Figure 2 shows the funnel plot of the relationship between the standard error and effect sizes of the interventions in the present meta-analysis.

With this plot, the classic fail-safe N (Rosenthal, 1979) was calculated to determine how many missing studies with the effect size 0 should be published so as to reduce the overall effect size. Accordingly, the number of studies required for the average effect size determined as a result of the meta-analysis in this study to reach the approximate zero effect level was found. This number of studies is required to be higher than the number revealed by the 5k + 10 (k= the number of studies included in the meta-analysis) formula (Rosenthal, 1979).

## Findings

First of all, possible publication bias was examined. Descriptive statistics related to collected effect sizes, details of basic meta-analyses were reported according to both the fixed and random effect models. The heterogeneity of the effect sizes was tested (by $Q$) and measured (by $I^2$).

**Publication bias assessment**

Possible publication bias was assessed before starting the main analysis. As it has already been stated in the method section, a funnel plot, if there is no publication bias, resembles a symmetrical inverted funnel (Egger et al., 1998). On the contrary, in case of the presence of publication bias, a funnel plot will often be asymmetrical and skewed. Visual examination of Figure 2 was carried out by using trim-and-fill methods. As it is illustrated in Figure 2, trim-and-fill method estimates that there are 8 possible missing studies (black dots in Figure 2), while the funnel plot of standard error by Hedges' g displays that a weak deviation has been detected (open circles in Figure 2).

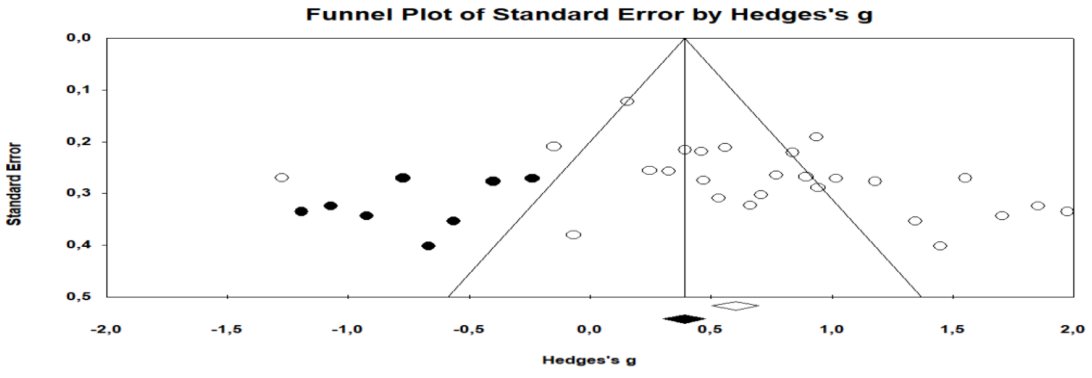


**Figure 2.** Funnel plot of Standard Error by Hedges' g

The classic fail-safe N test determined that a total of 1188 missing studies would be required to make the overall effect size statistically insignificant. This number is eight times higher than the 140 [5k + 10= 5(26) + 10)] missing studies suggested by Rosenthal's (1979) formula. Thus, in order to bring the reported effect sizes to the values that may be statistically insignificant, there should be an unreasonably large number of undetected studies with zero effect. Based on the funnel plot and statistical tests, it was decided that the effect sizes were not inflated by publication bias.

**Table 3.** Results for the classic fail-safe N

| | |
|---|---|
| *z* for observed studies | 13.38 |
| *p* for observed studies | .00 |
| Alpha | .05 |
| Tail | 2.00 |
| *z* for alpha | 1.95 |
| Number of observed studies | 26 |
| Number of missing studies that would bring the p value to >alpha | 1.188 |

**General characteristics of the interventions**

Table 3 shows that studies included in the scope of meta-analysis were divided into two as domestic and foreign for the analysis. 12 of the relevant studies were conducted in Turkey (e.g. Demir, 2017; Gülay, 2012; Vardar, 2011) and 14 of them were conducted abroad (e.g. Bol, Campbell, Perez & Yen, 2016; Digiacomo, 2016; Olakanmi & Gumbo, 2017). When the distribution of the studies by years was examined, it was found that five-year periods were used in grouping the studies and most of the studies were carried out after 2015 (e.g. Zheng, Li., & Chen, 2016; Çokçalışkan, 2019). In addition, six studies conducted between 2010 and 2014, seven studies conducted between 2005 and 2009, and one study conducted between 2000 and 2004 were available in the meta-analysis. 11 of the studies mentioned were conducted at university level (e.g. Becker, 2011; Bol et all., 2016), 9 of them at secondary school level (e.g. Nwafor et al, 2015; Aydoğan, 2018), 5 of them at primary school level (e.g. Ataş, 2009; Dalkıran, 2019), and 1 of them at high school level (Çokçalışkan, 2019), while the interventions were mostly realized in Mathematics (n=9; e.g. Perels, Dignath & Schmitz, 2009), Sciences (n=5; e.g. Cengiz, 2019), and English (n=4; e.g. Vardar, 2011) courses.

The sample sizes of the studies included in the meta-analysis were grouped by the total number of students in the experimental and control groups, and the lengths of interventions were stated as grouped by week. Accordingly, 8 studies with a total sample size consisting of 20 to 50 students (e.g. Camahalan, 2006), 12 studies with a sample size of 50 to 80 students (e.g. Flemming, 2002), and 6 studies with a sample size of 81 and more students (e.g. Israel, 2007) were available in the meta-analysis. Concerning the length of intervention in the experimental studies, 9 studies with a length of intervention lasting for 1 to 4 weeks (e.g. Ataş, 2009; Lemcool, 2007), 10 studies for 5 to 9 weeks (e.g. Arsal, 2010; Gülay, 2012), 4 studies for 10 to 14 weeks (e.g. Kayıran, 2014; Yıldızlı, 2013), and 3 studies for 15 weeks and more (e.g. Bates, 2006; Becker, 2011) were determined.

**Overall effects on academic achievement**

26 independent interventions including 1.799 participants were analyzed in this meta-analysis. Table 4 shows the results of analyses exploring the effects of self-regulated learning interventions on academic achievement and Figure 2 presents the forest plot of overall effects. Based on this, an overall significantly positive effect size in favor of self-regulated learning in various subject disciplines (Fixed Effects Model Hedges' $g$ = 0.601, 95% CI [0.505-0.696], p <0.001; Random Effects Model Hedges' g = 0.728, 95% CI [0.479-0.976], p <0.001) was found. In other words, students who used self-regulated learning strategies had

significantly better academic achievement results, when compared to students who did not benefit from self-regulated learning strategies in their learning activities.

**Table 4.** Findings for the Effect Sizes of the Studies Included in the Meta-Analysis

| Analytical models | Average effect size | N | Z | Standard Error | 95% Confidence Interval | | d | *Q* | p | $I^2$ |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Lower Limit | Upper Limit | | | | |
| Fixed effect | 0.601 | 26 | 12.298 | 0.049 | 0.505 | 0.696 | 5 | 159.754 | .000 | 84.351 |
| Random effect | 0.728 | 26 | 5.741 | 0.127 | 0.479 | 0.976 | | | | |

The forest plot showing the distribution of effect sizes of the studies included in the meta-analysis according to the random effects model is presented in Figure 3.

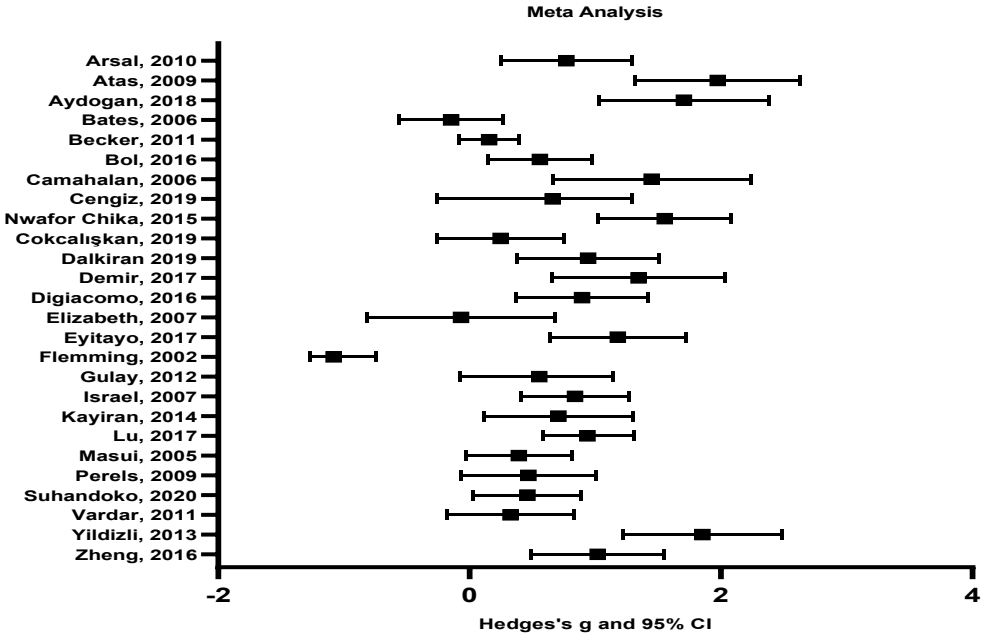


**Figure 3.** Forest Plot Displaying the Effect Size of Studies Under Random Effects Model

As seen in Figure 3, when the effect sizes of the studies included in the study were examined one by one, it was determined that some of their studies had a very large and significant effect in favor of the experimental group (Ataş, 2009; Aydoğan, 2018; Yıldızlı, 2013; Zheng et all., 2016). On the other hand, as in Bates' (2006) study, it was determined that some studies have significant effect sizes in favor of the control group.

**Heterogeneity analyses**

When the between-study variance is examined to the extent of heterogeneity, *Q*-statistic and I-square indexes ($Q$ = 159.754, $I^2$ = 84.351%, $p < 0.001$) show that the dispersion of effect sizes between studies is significantly heterogeneous (Borenstein et al., 2011). This confirms that random effects model is more appropriate in calculating the summary effect size of self-regulated learning on student academic achievement. Moderator variables were tested to check whether the different characteristics of the studies caused the effect sizes to change.

**Moderator Analyses**

The results of the moderator analyses are presented in this section. The selected study characteristics had acceptable power to explain the variability of effect size to varying degrees. Each of the six moderators was examined separately and shown in Table 5.

**Table 5.** Moderator analysis results

| Moderators | Hedges' g | N | 95% CI | | Heterogeneity Test | |
|---|---|---|---|---|---|---|
| | | | Lower Limit | Upper Limit | Q | p |
| Publication Place | | | | | 3.344 | .067 |
| Foreign | 0.530 | 14 | 0.190 | 0.871 | | |
| Domestic | 0.964 | 12 | 0.647 | 1.281 | | |
| Publication Year | | | | | 55.750 | .000 |
| 2000 ≤ Y ≤ 2004 | -1.273 | 1 | -1.801 | -0.745 | | |
| 2005 ≤ Y ≤ 2009 | 0.675 | 7 | 0.158 | 1.192 | | |
| 2010 ≤ Y ≤ 2014 | 0.688 | 6 | 0.231 | 1.145 | | |
| 2015 ≤ Y | 0.926 | 12 | 0.688 | 1.164 | | |
| Grade Level | | | | | 11.204 | .011 |
| Primary | 0.990 | 5 | 0.393 | 1.587 | | |
| Secondary | 1.037 | 9 | 0.721 | 1.353 | | |
| High School | 1.180 | 1 | 0.638 | 1.723 | | |
| Undergraduate | 0.333 | 11 | -0.018 | 0.684 | | |
| Course Type | | | | | 94.913 | .000 |
| Mathematics | 0.941 | 9 | 0.548 | 1.335 | | |
| Science | 0.771 | 5 | 0.544 | 1.013 | | |
| English | 0.810 | 4 | 0.335 | 1.207 | | |
| Informatics | -0.148 | 1 | -0.558 | 0.263 | | |
| Human Rights C. | 1.704 | 1 | 1.030 | 2.377 | | |
| Business Administration | 0.392 | 1 | -0.031 | 0.816 | | |
| Chemistry | 1.180 | 1 | 0.638 | 1.723 | | |
| Accounting | 0.156 | 1 | -0.084 | 0.396 | | |
| Pedagogy | 0.461 | 1 | 0.031 | 0.890 | | |
| Psychology | -1.273 | 1 | -1.801 | -0.745 | | |
| Art Criticism | 1.344 | 1 | 0.652 | 2.036 | | |
| Sample Size | | | | | 4.147 | .126 |
| 20≤N≤50 | 1.035 | 8 | 0.571 | 1.499 | | |
| 51≤N≤80 | 0.696 | 12 | 0.266 | 1.126 | | |
| 81≤N | 0.448 | 6 | 0.121 | 0.775 | | |
| Length of intervention | | | | | 10.453 | .015 |
| 1≤W≤4 | 0.822 | 9 | 0.486 | 1.157 | | |
| 5≤W≤9 | 0.926 | 10 | 0.639 | 1.213 | | |
| 10≤W≤14 | 0.890 | 4 | 0.288 | 1.493 | | |
| 15≤W | -0.391 | 3 | -1.144 | 0.362 | | |

**The Effect of Publication Place**

The first moderator variable of the meta-analysis was determined as the place of publication. As a result of the analyses to determine whether this moderator caused a change in the effect sizes, the mean of effect size

was calculated 0.530 for the studies conducted abroad and 0.964 for the studies conducted in Turkey. In line with this finding, it is possible to state that the educational interventions based on self-regulated learning had a low level of effect in the foreign studies and a high level of effect in the domestic studies on academic achievement (Hedges & Olkin, 1985). In addition, based on the results of the test of heterogeneity to determine whether there was a significant difference between the effect sizes obtained from the studies according to the country in which the studies were conducted, no significant difference between the average effect sizes of the studies in terms of academic achievement was found ($Q$=3.344; p>.05).

**The Effect of Publication Year**

In order to determine whether the effect sizes of the studies included in the meta-analysis differed according to the year of publication, the studies were grouped as five-year periods and analyzed. According to the year in which the educational interventions based on self-regulated learning were conducted, the means of effect size on academic achievement were -1.273 between 2000 and 2004, 0.675 between 2005 and 2009, 0.688 between 2010 and 2014, and 0.926 from 2015 to date. Based on the results of the test of heterogeneity to determine whether there was a significant difference between the effect sizes obtained from the studies according to the year in which the studies were conducted, a significant difference between the average effect sizes of the studies in terms of academic achievement was found ($Q$=55.750; p<.05). The revealed findings show that the effect sizes of the educational interventions based on self-regulated learning have increased over the years and the studies conducted as of 2015 have a higher level of effect when compared to other years.

**The Effect of Grade Level**

When the grade level of participants (primary, secondary, high school, and university) were examined in detail to determine whether they caused a change in the effect sizes of the studies, the effect sizes were found 0.990 for the studies conducted at primary school level, 1.037 for the studies at secondary school level, 1.180 for the studies at high school level, and 0.333 for the studies at undergraduate level. According to this finding, the effect sizes of the studies for educational intervention based on self-regulated learning were positive at all grade levels and also at high effect level at secondary and high school levels. As a result of the test of heterogeneity to determine whether there was a significant difference between the effect sizes of the studies included in the meta-analysis according to grade level, a significant difference between the effect sizes of the studies was determined ($Q$=11.204; p<.05). According to these findings, the level of academic achievement attained as a result of educational interventions based on self-regulated learning that were carried out at different grade levels differs statistically significantly.

**The Effect of Course Type**

Whether the effect of the experimental interventions based on self-regulated learning on academic achievement differed according to the subject area in which the studies were conducted, or not, was examined. The effect sizes of the educational interventions based on self-regulated learning according to the subject area were calculated as -0.148 in Informatics, 0.771 in Sciences, 0.810 in English, 1.704 in Human Rights and Citizenship, 0.392 in Business Administration, 1.180 in Chemistry, 0.941 in Mathematics, 0.156 in Accounting, 0.461 in Pedagogy, -1.288 in Psychology, and 1.334 in Art Criticism. At this point, the negative effect sizes emerging in the subject areas of Informatics and Psychology are remarkable. Another striking point is that the effect sizes in Mathematics, Sciences and English courses, where most of the studies were conducted, are close to the large effect level. In addition, it was investigated whether there was a significant difference in terms of the effect sizes of the studies included in the meta-analysis according to the subject area in which the intervention was carried out. As a result of the test of heterogeneity, it was determined that there was a significant difference between the average effect sizes of the studies in terms of academic achievement ($Q$=94.913; p>.05). These findings show that there is a statistically significant difference between the academic

achievement levels revealed by the educational intervention studies based on self-regulated learning according to the subject area in which the intervention is carried out.

**The Effect of Sample Size**

The studies included in the meta-analysis were examined in terms of the sample size. As a result of the analysis, the mean of effect size was found 1,035 for the studies with a sample size of 20 to 50 participants, 0.696 for the studies with 51 to 80 participants, and 0.448 for the studies with 81 or more participants. According to this finding, the highest average effect size belongs to the studies conducted with 20 to 50 participants. The studies with a sample size of 80 and more participants have lower effect size than the other studies. Based on the results of the test of heterogeneity to determine whether there was a significant difference between the effect sizes of the studies included in the meta-analysis in terms of sample size, no significant difference between the effect sizes of the studies was determined ($Q$=4.147; p>.05). Therefore, the level of academic achievement attained as a result of educational interventions based on self-regulated learning that were carried out with different sample sizes did not show a statistically significant difference.

**The Effect of Length of Intervention**

According to the length of intervention, the means of the effect sizes of the studies were, respectively, determined as 0.822 between 1 and 4 weeks, 0.926 between 5 and 9 weeks, 0.890 between 10 and 14 weeks, and -0.391 between 15 and more weeks. Based on this, the studies with a length of intervention of 5 to 9 weeks had the highest effect value, while the lowest and negative effect value was found in the studies lasting for 15 weeks and above. As a result of the test of heterogeneity to determine whether there was a significant difference between the effect sizes of the studies according to the length of intervention, a significant difference between the average effect sizes of the studies in terms of academic achievement was found ($Q$=10.453; p<.05).

## Conclusion and Suggestions

The present study aims to examine the effect of self-regulated learning on academic achievement using meta-analysis. In this section, I discuss the study's limitations, present interpretations of these main findings, and make suggestions for policy and practice.

**Limitations**

The present meta-analysis study has been conducted by a strict procedure and standards; however, there are a few limitations of the study.

First, the self-regulated learning studies included in the meta-analysis were accessed from the databases available to the author. The sample is limited due to the selection of studies that contain educational interventions and provide empirical evidence on academic achievement from the relevant studies. More comprehensive meta-analyses may be conducted by ensuring institutional connections in order to expand the databases. In addition to this, all studies included in the analysis cover the interventions carried out at a specific grade level. For this reason, future research should investigate the effectiveness of more comprehensive interventions in educational environments.

Second of all, it is not clear whether an intervention is needed or not, as the readiness levels of students are not determined before the intervention in the studies within the scope of meta- analysis. This situation, especially, has lead to a limitation in the studies conducted at higher education level.

Thirdly, self-regulated learning is a process that is too complex to be coded reliably in its all aspects because of its sub-dimensions. Most of the studies available in the literature have examined one or a few dimensions of self-regulated learning. However, it is difficult to determine the overall effect of self-regulated learning on academic achievement through one- dimensional studies. This study, therefore, is limited to the

research evaluating self-regulated learning as a whole. This has hindered the inclusion of online interventions in the study. In the online instructional applications that are rapidly spreading, several dimensions which are quite different from the interventions carried out in traditional educational environment are handled. Moreover, in these learning environments, the learner's responsibility in the learning process is very high (Schunk & Zimmerman, 1998). Thus, advanced analyses should be utilized in order to compare the both (Dignath et al., 2008).

Besides, it will be interesting for future research to determine which dimension is more effective in terms of academic achievement, conduct a new analysis with the same moderator variables by following the procedures of this study, and compare the results with the ones obtained in this study. In addition, affective data (e.g. motivation, attitude, and etc.) on the effect of self-regulated learning on academic achievement have not been included in the meta-analysis due to the fact that there are a limited number of studies.

Lastly, this study is limited to English and Turkish due to the linguistic competence of the researcher. Thus, future research may collaborate with researchers who know other languages such as Spanish, French, German, Chinese, Japanese, and Scandinavian languages.

In this study, a total of 26 experimental and quasi-experimental studies were examined by meta-analysis method in order to determine the effects of self-regulated learning on academic achievement. In addition, it was tested whether the moderators such as publication year, publication place, grade level, course type, sample size, and length of intervention contributed to the variance explained in the analysis.

Due to the heterogeneity among the effect sizes of the studies included in the meta-analysis, random effects model was selected and the average effect size was calculated as Hedges' g = 0.72 (SE = 0.12). This value obtained from the experimental studies shows that educational interventions based on self-regulated learning have a positive and medium level of effect (Hedges & Olkin, 1985) on student academic achievement. These results indicate that self-regulated learning has a structure suitable for supportive research and intervention studies which have the objective of increasing academic achievement (Dent & Koenka, 2015; Dignath & Buttner, 2008; Dignath et al., 2008; Donker, De Boer, Kostons, Van Ewijk & van der Werf, 2014; Ergen & Kanadlı, 2017; Hattie, Biggs & Purdie, 1996; Jansen, Van Leeuwen, Janssen, Jak & Kester, 2019).

When studies investigating the effect of self-regulated learning on academic achievement were categorized as domestic and foreign, no significant difference was found between the average effect sizes of the studies. These findings are considered to be influenced by globalization process. The factors causing researchers to focus on common issues and to reach similar results can be listed as the follow-up of global trends in education that is becoming easier, advancements in educational technologies, and the convenience of accessing to most research in the field from other countries. Concerning the distribution of the studies included in the meta-analysis by years, it is seen that frequency of study and effect sizes have increased over the years. It can be said that the increase in the frequency of study has resulted from the fact that self-regulated learning skill is among significant competencies for students in recent technological and social conditions. Research in the field of education also increases as part of the needs arising from learning activities and tries to produce solution to current problems. The increase in effect sizes can be evaluated in relation to the fact that self-regulated learning is a developing research area. Thus, it is reasonable to assume that the information, findings and results of the previous studies are used in new research.

Regarding the grade level in which intervention studies are carried out, the results show that self-regulated learning contributes positively to students at various grade levels in increasing academic achievement. While this contribution increasingly continues up to high school level [Hedges' g (primary) = 0.99; Hedges' g (secondary) =1.037; Hedges' g (high school) =1.180)], it drops down below primary school level at undergraduate grade level [Hedges' g (undergraduate)=0.333]. It was not possible to make clear inferences

when trying to establish a connection between these results and the findings from other studies in the literature. While some studies (Dent & Koenka, 2015; Dignath & Büttner; 2008) indicate that secondary school students benefit less from self-regulated learning compared to primary school students, some studies (Ergen & Kanadlı, 2017) reveal that the effect size of self-regulation for academic achievement is "large" at primary school and undergraduate levels and "medium" at secondary school level. Some other studies (Donker et al., 2014) have shown that both primary and secondary school students benefit from interventions, but there is no significant difference between primary and secondary school students. In this case, it would be appropriate to refer to the theoretical framework of self-regulated learning and the relevant studies in the literature. According to this, the probability that students have gained competence in self-regulated learning until they reach higher education level or the learner autonomy has already increased at this level may be the reason of the decline in the effect sizes (Clarebout, Horz, Schnotz & Elen, 2010 ; Pieger & Bannert, 2018; Jansen et al., 2019). It is also possible that students who have gained their mastery of a particular educational task and can automatically and effortlessly recall the necessary information from their memory do not show much tendency to self-regulate. As students become more familiar with school life and lessons, they can routinize their tasks of studying and learning by making use of the strategies that they have learnt previously. Therefore, this can hinder their self-regulated learning. This inference coincides with the generalization that most of the self-regulated learning strategies develop from early childhood to adolescence (Boekaerts, 2006; Flavell, 1979; Kuhn, 2000; Winne, 1996: 330).

Experimental interventions aim to establish a difference to participants in terms of dependent variable. Therefore, it becomes difficult to create an effect on people who have expertise in the dependent variable of the research. It is thought that a similar case may be in question for the studies included in the research. As a matter of fact, the lowest effect in terms of grade level is at undergraduate level.

When the studies included in the meta-analysis were evaluated according to subject area, the highest values of effect were detected in two courses in the field of social sciences. In addition, the effect sizes in Mathematics and Science courses were found to be larger than the effect size in English course. In line with these findings and previous studies, it was not possible to make a certain judgment on the relationship between the academic subject area in which students apply self-regulated learning strategies and their academic achievement. Actually, in previous studies, while some researchers found that learning performance in Science and Social Studies courses was stronger than it was in Mathematics or English courses (Dent & Koenka, 2015), some researchers reported that interventions targeting math performance had the highest effect (Dignath et al., 2008; Donker et al., 2014; Ergen & Kanadlı, 2017). Another striking result of the study is that self-regulated intervention studies conducted to increase academic achievement are not effective in favor of the experimental group in Psychology and Informatics. The high probability that the students receiving education in the field of Psychology had knowledge of learning strategies beforehand may have prevented the attainment of desired success in intervention studies. The fact that the format of evaluating the academic achievement in Informatics course is different from the other courses makes it very difficult to comment on the results.

When the effect of length of intervention on student achievement was examined, it was found that interventions up to 14 weeks revealed positive and similar results. In addition, the intervention studies lasting more than 15 weeks could not have positive results on academic achievement in favor of the experimental group by creating negative effect. Also, in other studies in the literature, long-term interventions had slightly smaller effects on student performance than short-term interventions (Dignath et al., 2008). Besides, the number of sessions per week did not affect the effectiveness of interventions (Boer et al., 2013). From this point of view, it can be concluded that strategy teaching in the duration and to the extent which are appropriate to

student level is sufficient while gaining self-regulated learning skill and that long and intense interventions should be avoided.

**Conclusion**

Meta-analysis is a useful method in order to summarize the findings obtained from the studies conducted on a research subject. In addition, it allows to reach more reliable results by reducing implementation and measurement errors that may occur in primary studies within the average and to make general inferences on current problems. Increasing academic achievement and regulating learning is also one of the most current problems encountered by educational researchers and policymakers (Beishuizen & Steffens, 2011, Pintrich, 2004, Zimmerman, 1990; 2002; 2008).

The present study has contributed to the knowledge in the literature respecting the role of self-regulated learning in increasing academic achievement. Demographic and methodological characteristics of the studies were also examined as moderator variables. Main findings revealed that interventions based on self-regulated learning could positively affect academic performance. As the most appropriate way to increase academic performance, an integrated self-regulation learning process with multiple functions and a wide variety of structures is recommended. In addition, small sample size and experimental designs applied at an early age should be adopted to obtain optimal statistical power. The length of treatment should not be too long to eliminate confounding variables. The main contribution of this study lies in investigating moderator variables to make inferences about how self-regulated learning interventions lead to positive effects. The study contributes to the knowledge on how self-regulated learning interventions should be designed in order to maximize the academic performance levels of students.

Consequently, self-regulated learning provides an organizational framework with positive effects for academic achievement. The evidence supports an integrated approach to curriculum planning as a part of learning program. Teachers equipped with this knowledge can adapt instruction and school tasks to facilitate self- regulated learning of students as an effective way to improve student academic achievement. Moreover, the results of this meta-analysis comprise a new basis for future research.

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International Online Journal of Educational Sciences

ISSN: 1309-2707

# Leisure Education as A Predictor of Personal Growth Initiative

*Research Article*

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**To cite this article:** Ayyildiz-Durhan, T., & Kurtipek, S., & Gungor, N. B. (2021). Leisure education as a predictor of personal growth initiative**,** *International Online Journal of Educational Sciences, 13*(5), 1430-1444.

ARTICLE INFO

*Article History*:

Received: 09.03.2021

Available online: 01.11.2021

ABSTRACT

This study aimed to determine the effect of leisure education on personal growth initiative and the differentiation situations of various variables in leisure education and personal growth initiative. The study designed with a relational survey model and 493 sports sciences faculty students participated in the study. The data were obtained by "Leisure Education" (LES) and "Personal Growth Initiative" (PGIS) scales. T-test, One-Way Anova, Pearson Moments Multiplication Correlation Coefficient (r) performed to determine the relationship between variables, and Regression Analysis used to determine the effect of leisure education on personal growth initiative were used in the analysis of the data. The results showed that the participants had high levels of leisure education and personal growth initiative, and the perception of efficient usage of leisure and taking leisure education lessons differentiate leisure education and personal growth initiative. At the same time, research results revealed that leisure education had a moderately significant positive relationship with personal growth initiative. Leisure education had an effect of %25 in explaining personal growth initiative. As a result of the research, it can be said that leisure education programs are an important tool in increasing individuals' personal growth initiation.



**Keywords:**
Education, leisure education, personal growth initiative.

## Introduction

Education characterizes a long path that covers the lifelong learning processes of individuals. In this way, the individual experiences both formal and informal learning processes systematically. In this process, individuals need education from the moment of their birth for their primary purposes such as survival, sometimes expected such as progress in the profession, sometimes arbitrary such as taking advantage of their leisure time, and sometimes solving life problems. Although school education meets this need in certain periods, it is not possible to continue it unilaterally throughout life (Arslan, 2010).

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DOI: https://doi.org/10.15345/iojes.2021.05.009

The main aim of education is to develop people's values and attitudes and equip them with the knowledge and skills that will make them feel safer and enjoy life more. This means that education is not only about business and economics, but also must be equally considered for the development of the individual as a fully participatory member of society and for improving the quality of life (Sivan & Ruskin, 2000). Accordingly, it can be said that one of the primary goals of education is integrating individuals into society and life. To build this integration with solid foundations, it is thought that the education received at school alone is not enough for human beings, who are versatile creature. In this context, with the alternative educational approaches (Nahrstedt, 2000) and the constructivist approach that puts the student at the centre, the education-training programs prepared for the demands and skills of the students are preferred and implemented.

It is becoming increasingly important for students to access learning environments not only in lessons, but also in extracurricular activities and leisure. In this context, leisure time, which is a term that defines the perception that the individual is free to choose to participate in meaningful, fun and satisfying experiences (Dattilo, 1991), is a valuable period of time that includes activities that students love and willingly participate in. The activities that individuals prefer in this time period (Segev, 2018) where they only serve themselves, are considered as the general name of the activities that are personally satisfying and performed without obligation (Stebbins, 2005) by using their skills and resources. Learning the contribution of leisure activities to life, creating a leisure awareness, being motivated, transforming this information into behaviour and adopting it as a life philosophy is very important for personal and social development. At this point, leisure education comes to the fore (Munusturlar, 2014). Leisure education is an umbrella term used to refer to approaches that use leisure activities aimed at developing an individual holistically, especially in terms of the ability to manage their leisure responsibly (Macků & Čech, 2017). Leisure education can be defined as the education provided for the individual to use his/her leisure in a way that is beneficial to himself/herself and the society. In other words, leisure education is an education that aims to gain a set of values that the individual will take into account while choosing the activities to be participated in in his spare time. Thanks to this training, the individual has the opportunity to express himself more creatively and to obtain information that improves his/her personality (Şen, 2013). In this form, leisure education is seen as an educational process that teaches how to cope with the challenging aspects of leisure time (Sivan, 2000a).

Through leisure education, individuals learn to understand the role of leisure in their lives, to develop positive attitudes towards their leisure, and to learn skills necessary for optimal leisure participation (Sivan, 2000b). Individual development approaches of leisure education are often associated with a person-centred approach (Dieser, 2020), but are critical to improving both individual and community well-being (Oncescu & Neufeld, 2019). In this way, it represents an approach that teaches individuals the meaning of leisure, enables them to develop a positive attitude towards leisure, and helps individuals to develop their skills and abilities that can be used in leisure (Sivan, 1997; Sivan, 2014).

The aims of leisure education;

- ✓ To create a conscious awareness of this process to be able to intervene in ways that will improve leisure.
- ✓ It has the potential to be an effective way of improving people's mental health, well-being and leisure behaviour throughout life.
- ✓ Leisure education is the place where it is necessary to facilitate not only the development of skills, knowledge and confidence to participate in preferred activities, but also the development of skills, knowledge and confidence to overcome constraints to participation.

- ✓ Leisure education will enable them to develop skills, knowledge and confidence to address their mental health and well-being needs through personally meaningful leisure pursuits when faced with lifelong transitions and health challenges (Hutchinson & Robertson, 2012).
- ✓ It can be expressed as gaining the ability of individuals to spend their leisure in a constructive and creative way and to choose leisure activities to improve themselves (Şen, 2013).
- ✓ With the increasing understanding of the importance of leisure for the development of individuals and society, the most general purpose of leisure education has been accepted as increasing the quality of life of individuals. Leisure education, which is a developmental process, is a part of socialization (Sivan, 2014; Sivan, 2000a, Sivan, 2000b).
- ✓ Through leisure education, individuals can enable them to discover the personal meanings of leisure, to identify leisure preferences, and to better understand the role of leisure in their lives (Wilkinson, Kmiecik & Harvey, 2020).
- ✓ Leisure education includes programs that aim to encourage people to experience leisure and happiness and ultimately thrive, and it offers programs to deliver those positive experiences. It also contributes to self-determination by helping individuals meet their autonomy, competence and social connection needs (Dattilo, 2015).

Looking leisure education as education or non-formal education in and through leisure is initially considered a good way to understand it (Kleiber, 2012). However, leisure education differs from non-formal education at some point with its wide range of activities. Leisure education goes beyond the institutionalized constraints of non-formal education (McFee & Tomlinson, 1997). At the same time, the most prominent feature that separates the concepts of education and leisure education from each other emphasized that compulsory education in education, volunteering and individual choices in leisure (Şen, 2013). The necessity of leisure education cannot be denied. Because the goals leisure education sets and the benefits it provides concern every segment of society (Arslan, 2010).

Leisure education refers to lifelong learning and development processes. At the same time, the concept has links to active learning and experiential education (Henderson, 2007). In this process, which directly affects individuals' leisure time management styles, expectations and development, the higher the level of leisure time education, the more likely it is to benefit from the benefits of leisure time (Munusturlar, 2014) and it is possible to contribute to the future and development in this direction.

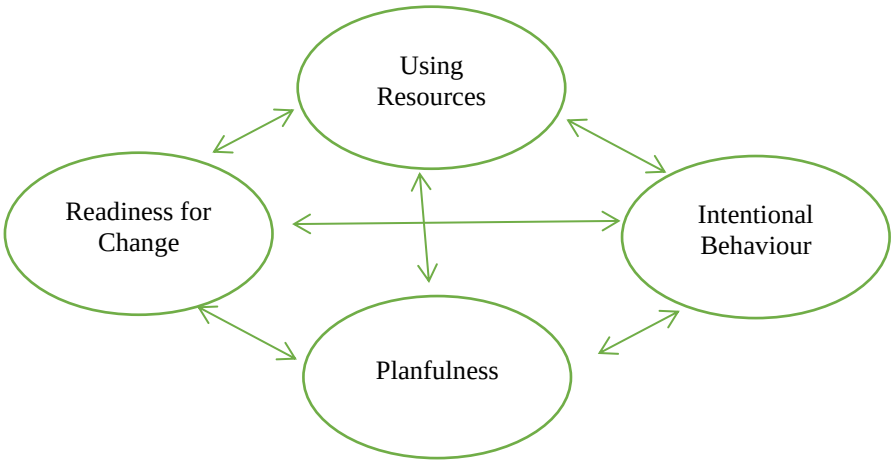
The personal growth process is a lifelong phenomenon like education (Genç and Fidan, 2018; Fidan, 2016; Robitschek, 1998). Personal growth is the process in which people strive to develop and advance their potential to make themselves competent and achieve their goals (Karaman, Artan & Cebeci, 2020). Personal growth can be defined as the experience of subjective change in behaviours, thoughts and feelings that are then adaptively experienced. This type of change can take the form of more control of the person's daily environment, or it can manifest as more resilience in the face of obstacles and difficulties (Kaur & Singh, 2017). Personal growth includes all educational practices that operate to raise awareness and maturity to gain strength in the face of any event that a person may encounter in his life. At the basic point, personal growth can be described as self-improvement (Genç and Fidan, 2018).

When personal growth depends on deliberate processes, the individual is fully aware that change is happening and is actively and willingly involved in the process. At this point, it is possible to talk about personal growth initiative. Personal growth initiative is the active, deliberate participation of an individual in the personal development process (Robitschek, 1998). According to Robitschek (1998), who put forward the personal growth initiative theory and made its most general definition: "*Personal growth initiative, however, is broader than self-efficacy in that it includes behavioural components as well, which involve implementing these cognitions*

*across growth domains. In other words, the behavioural components put into practice the cognitions related to personal growth: for example, if I want to change something in my life. I initiate the transition process."*

Individuals with high personal growth initiative can use existing external resources and initiate deliberate behaviours aimed at self-improvement. It is evaluated that people with high personal growth initiative are able to identify the source of distress and are more open and expressive about the event (Shigemoto, Ashton & Robitschek, 2016). Individuals with high personal growth initiation are more willing to change themselves in the direction they desire. They are more concerned about personal growth than individuals who have low personal growth initiative and are probably less confident in their ability to solve life changes (Ogunyemi & Mabekoje, 2007).

Robitschek et al. (2012) have stated that personal growth initiative has four main components. These components are readiness for change, Planfulness using resources and intentional behaviour in Figure 1.




Personal growth initiative described as an acquired skill for personal development in living spaces. Sharma and Rani (2013) also supported the above components. Accordingly, personal growth initiative;

- Readiness for change (ability to assess one's own psychological readiness to enter personal growth processes);
- Planfulness (ability to be strategic and organized in self-change efforts);
- Using resources (the ability to identify and access external resources such as other people and materials)
- Intentional behaviour (actual pursuit or self-change plans and behaviours).

Personal growth initiative aiming to develop in the desired direction consciously in various areas of life; It is the basic element underlying the search for individual development. In this direction, while achieving change and development, the process of personal growth initiative brings along various trainings (Genç and Fidan, 2018). Leisure education, which has an important place among these trainings, is the only source that supports the individual with personal growth. Through leisure education, individuals gain autonomy, knowledge, development, skills and experience. The hypothesis that individuals who evaluate these gains in their living conditions will have a positive personal growth initiative is the main point in the emergence of the study. The aim of the study is to determine the predictive effect of leisure education on personal growth initiative and to compare various variables which are gender, class, using leisure time efficiently, taking the leisure education lesson with leisure education and personal growth initiative.

## Method

### Research Model

This research, which examines the relationship between the leisure education and personal growth initiative of sports sciences students, had a descriptive structure and designed with a relational survey model. The relational survey model aims to reveal the presence or degree of change between two or more variables (Karasar, 2013).

### Study group

The study group of the research consisted of 380 women (77%), 113 men (22.9) 493 participants, who were studying at the Sports Sciences Faculties of three different state schools in the 2020-2021 academic year. 229 (46.5%) of the participants were first grade, 139 (28.2%) second grade, 69 (14%) third grade and 56 (11.4%) fourth grade students. However, 150 (30.4%) of the participants were studying physical education and sports teaching, 88 (17.8%) sports management, 108 (21.9%) coaching training and 147 (29.8%) recreation department. The principle of easy accessibility, one of the purposeful sampling methods, was taken into account in the selection of the sample group in the study.

### Data Collection Tools

In the study, personal information form, "Leisure Education Scale" and "Personal Growth Initiative-II Scale" were used in the data collection process.

#### *Leisure Education Scale*

The scale developed by Munusturlar (2014) consists of 36 items and 7 sub-dimensions in total. The sub-dimensions of the scale named as "extrinsic motivation", "social interaction skills", "intrinsic motivation", "awareness", "boredom", "problem solving", and "time management". 7 sub-dimensions in the scale explain 58.4% of the total variance. In addition to this, the scale can also be used by taking into account the total evaluation. Considering the original form of the scale, the internal consistency coefficients for the sub-dimensions were .86, .84, .82, .80, .77, .79, .78, and .80 for all (Munusturlar, 2014). The internal consistency coefficients obtained from the data set for the sub-dimensions, respectively, it was determined as .85, .83, .84, .80, .79, .81, .77, and .83 for the whole scale. The result of the confirmatory factor analysis performed was (x2/sd= 2.81, RMSEA= .07, PGFI= .73, PNFI= .72, GFI= .90, AGFI= .87, CFI= .90) determined as.

#### *Personal Growth Initiative-II Scale*

The scale developed by Robitschek et al. (2012), and the scale was introduced into the Turkish literature after the validity and reliability studies were completed by Yalçın and Malkoç (2013). However, it consisted of 16 items and 4 sub-dimensions in total. Scale sub-dimensions were "Readiness for change", "planfulness", "using resources", and "intentional behaviour". The scale can also offer value over the total score. The internal consistency coefficients in the original form of the scale were respectively; .83, .87, .61, .84, for all of them .91 (Robitschek et al., 2012). The internal consistency coefficients obtained from the data set for the sub-dimensions are .82, .86, .64, .83, and the value for the whole scale was .92. The result of the confirmatory factor analysis obtained from the scale was (x2/sd= 3.54, RMSEA= .08, PGFI= .69, PNFI= .70, GFI= .86, AGFI= .85, CFI= .91) determined as.

#### *Confirmatory Factor Analysis Results of Measurement Tools used in the Scope of the Study*

**Table 1.** Confirmatory Factor Analysis Results of Leisure Education Scale and Personal Growth Initiative Scale

| Model Fit Index | Perfect Range | Acceptable Range | LES | PGIS |
|---|---|---|---|---|
| $X^2/sd$ | $0<X^2/sd<2$ | $2<X^2/sd<5$ | 2.81 | 3.54 |

| | | | | |
|---|---|---|---|---|
| RMSEA | 0.00<RMSEA<0.05 | 0.05<RMSEA<0.10 | .07 | .08 |
| PGFI | 0.95<PGFI<1.00 | 0.50<PGFI<0.95 | .73 | .69 |
| PNFI | 0.95<PNFI<1.00 | 0.50<PNFI<0.95 | .72 | .70 |
| GFI | 0.90<GFI<1.00 | 0.85<GFI<0.90 | .90 | .86 |
| AGFI | 0.90<AGFI<1.00 | 0.85<AGFI<0.90 | .87 | .85 |
| CFI | 0.95<CFI<1.00 | 0.90<CFI<0.95 | .90 | .91 |

Schermelleh-Barrier, Moosbrugger & Muller, 2003; Kline, 2005; Tabachnick & Fidell, 2013

Confirmatory factor analysis was applied to test the construct validity of Leisure Education and Personel Growth Initiative Scales. The goodness of fit values obtained as a result of the analyses performed are given in Table 1. The confirmatory factor analysis result for the Leisure Education Scale was determined as (x2 / df = 2.81, RMSEA = .07, PGFI = .73, PNFI = .72, GFI = .90, AGFI = .87, CFI = .90). In addition to, confirmatory factor analysis result for the Personal Growth Initiative Scale was determined as (x2/sd= 2.81, RMSEA= .07, PGFI= .73, PNFI= .72, GFI= .90, AGFI= .87, CFI= .90). According to these results; The single-factor structure of the scales used in the study was confirmed.

**Data Analysis**

During the data analysis process, firstly, data forms belonging to extreme values were determined and 12 forms were excluded from the data set. Then, by looking at the significance result of Kolmogorov Smirnov and Shapiro-Wilk tests, skewness and kurtosis values were examined. For the measurement tools used in the study, these values were between -1.5 and +1.5 (for LES = 1.20 - .75; PGIS = -.36 - .58). These results showed that the data were distributed normally (Tabachnick & Fidell, 2013). By examining the assumptions of normality and linearity, the suitability of the data set to Regression Analysis was examined. With the determination of a linear relationship in the scatter diagram, it was concluded that the data set met the regression analysis assumptions. From this point; T-test, One-Way Anova, Pearson Moments Multiplication Correlation Coefficient (r) to determine the relationship between variables, and Regression Analysis to determine the effect of leisure education on personal growth inititative. For analyzes used in the research were carried out with SPSS 22 Package Program and Excel Database.

## Results

**Table 2.** Distribution of the Mean Scores of the Participants from the Leisure Education Scale

| Scale | n | Min. | Max. | $\bar{x}$ | S |
|---|---|---|---|---|---|
| Extrinsic motivation | 493 | 1.00 | 5.00 | 4.09 | .61 |
| Social interaction skills | 493 | 1.00 | 5.00 | 4.15 | .62 |
| Instrinc motivation | 493 | 1.00 | 5.00 | 2.14 | .69 |
| Awareness | 493 | 1.00 | 5.00 | 3.52 | .76 |
| Boredom | 493 | 1.00 | 5.00 | 3.21 | .89 |
| Problem solving | 493 | 1.00 | 5.00 | 2.73 | .86 |
| Time management | 493 | 1.00 | 5.00 | 3.11 | .71 |
| Leisure education scale | 493 | 1.00 | 5.00 | 3.24 | .36 |

Participants' mean score from the Leisure Education Scale ($\bar{x}$ = 3.24) was determined from the "extrinsic motivation" subscale ($\bar{x}$ = 4.09), the "social interaction skills" sub-dimension ($\bar{x}$ = 4.15), and the "intrinsic motivation" sub-dimension ($\bar{x}$ = 2.14), "awareness" sub-dimension ($\bar{x}$ = 3.52), "distress" sub-dimension ($\bar{x}$ = 3.21), "problem solving" sub-dimension ($\bar{x}$ = 2.73) and "time management" sub-dimension ($\bar{x}$ = 3.11).

**Table 3.** Distribution of the Mean Scores of the Participants from the Personal Growth Initative Scale

| Scale | n | Min. | Max. | $\bar{x}$ | S |
|---|---|---|---|---|---|
| Readiness for change | 493 | .25 | 5.00 | 3.55 | .84 |
| Planfullness | 493 | .20 | 5.00 | 3.50 | .85 |
| Using resources | 493 | .67 | 5.00 | 3.14 | .84 |
| Intentional behaviour | 493 | .50 | 5.00 | 3.52 | .84 |
| Personal Growth Initiative Scale | 493 | .81 | 5.00 | 3.45 | .71 |

Participants' mean score from the Personal Growth Initiative Scale ($\bar{x}$ = 3.45), the "readiness for change" sub-dimension ($\bar{x}$ = 3.55), the "planfullness" sub-dimension ($\bar{x}$ = 3.50), the "using resources" sub-dimension ($\bar{x}$ = 3.14), and It is from the "intentional behaviour" sub-dimension ($\bar{x}$ = 3.52).

**Table 4.** T-Test Results of the Mean Score Obtained from the Leisure Education and Personal Growth Initiative Scales According to the Gender Variable

| Scale | Gender | n | $\bar{x}$ | S | sd | t | p |
|---|---|---|---|---|---|---|---|
| Leisure Education Scale | Female | 380 | 3.23 | .30 | 491 | -1.05 | .29 |
| | Male | 113 | 3.27 | .50 | | | |
| Personal Growth Initiative Scale | Female | 380 | 3.43 | .68 | 491 | -1.24 | .21 |
| | Male | 113 | 3.53 | .81 | | | |
| | Total | 493 | | | | | |

p<.05

When Table 4 was examined, it was concluded that the leisure education and personal growth initative levels of the participants do not differ according to the gender variable ($t_1$ (491) = - 1.05, p> .05; $t_2$ (491) = - 1.24, p> .05).

**Table 5.** T-Test Results of the Mean Score Obtained from the Leisure Education and Personal Growth Scales According to the Variable Using the Leisure Time Efficiently

| Scales | U. L. T. E. | n | $\bar{x}$ | S | sd | t | p |
|---|---|---|---|---|---|---|---|
| Leisure Education Scale | Yes | 190 | 3.34 | .44 | 491 | 5.01 | .00 |
| | No | 303 | 3.17 | .27 | | | |
| Personal Growth Initiative Scale | Yes | 190 | 3.82 | .64 | 491 | 9.87 | .00 |
| | No | 303 | 3.22 | .66 | | | |
| | Total | 493 | | | | | |

p<.05

The mean score obtained by the participants who think they use their leisure time efficiently is ($\bar{x}$ = 3.34), and the participants who did not think they use it efficiently ($\bar{x}$ = 3.17). The results of the analysis indicated that the leisure education level of the participants who use their leisure time efficiently was significantly higher than the participants who did not use it efficiently [t (491) = 5.01, p <.05]. The mean score of the students who use their leisure time efficiently ($\bar{x}$ = 3.82) from the Personal Growth Initiative Scale, and it was determined as the students who do not use it efficiently ($\bar{x}$ = 3.22). Considering the analysis results, it was possible to state that the personal growth initiative level of the participants who use leisure time efficiently is statistically significantly higher [t (491) = 9.87, p <.05].

**Table 6.** T-Test Results of the Mean Score Obtained from the Leisure Education and Personal Growth Initiative Scales According to the Variable of Taking the Leisure Education Lesson

| Scales | T. L. E. L. | n | $\bar{x}$ | S | sd | t | p |
|---|---|---|---|---|---|---|---|
| Leisure Education | Yes | 37 | 3.32 | .53 | 491 | 2.38 | .018 |
| Scale | No | 456 | 3.23 | .34 | | | |
| Personal Growth | Yes | 37 | 3.83 | .89 | 491 | 3.31 | .001 |
| Initiative Scale | No | 456 | 3.42 | .69 | | | |
| | Total | 493 | | | | | |

p<.05

The mean score ($\bar{x}$ = 3.32) obtained by the participants who take the leisure education course is the participants who do not take the course ($\bar{x}$ = 3.23). The results of the analysis showed that the leisure education level of the participants who take leisure education lesson is statistically higher [t (491) = 2.38, p <.05]. On the other hand, the mean score obtained from the Personal Growth Inıtiative Scale of the participants who take the leisure education course is ($\bar{x}$ = 3.83), and the participants who did not take the course ($\bar{x}$ = 3.42). The results of the analysis indicate that the personal growth initiation level of the participants who took the leisure education course was higher [t (491) = 3.31, p <.05].

**Table 7.** One-Way Anova Results According to the Mean Class Level Variable Taken from the Leisure Education and Personal Growth Initiative

| Scales | Class | N | $\bar{x}$ | S | F | p |
|---|---|---|---|---|---|---|
| L. E. S. | 1st grade | 229 | 3.25 | .36 | .65 | .58 |
| | 2nd grade | 139 | 3.26 | .37 | | |
| | 3nd grade | 69 | 3.20 | .26 | | |
| | 4nd grade | 56 | 3.21 | .43 | | |
| | Total | 493 | 3.24 | .36 | | |
| P. G. I. S. | 1st grade | 229 | 3.43 | .69 | .19 | .90 |
| | 2nd grade | 139 | 3.49 | .69 | | |
| | 3nd grade | 69 | 3.46 | .70 | | |
| | 4nd grade | 56 | 3.43 | .90 | | |
| | Total | 493 | 3.45 | .71 | | |

p<.05

Considering Table 7, it was concluded that the leisure education and personal growth initiative levels of the participants did not differ statistically according to the class level variable [$F_1$ (3, 489) =. 65, p <.05; $F_2$ (3, 489) =. 19].

**Table 7.** Investigation of the Relationship between Variables with the Pearson Product Moment Correlation

| | Personal Growth Initative |
|---|---|
| Leisure Education | .50** |

p<.01

Analysis results showed that there was a moderate and positive relationship between leisure education and personal development (r = .50, p <.01).

**Table 9.** Regression Analysis Results Related to the Prediction of Personal Growth Initiative

| Variables | | Standardize β | Standart Error | Critical Rate | p | $R^2$ |
|---|---|---|---|---|---|---|
| Leisure education | Personal Growth Initiative | .50 | .07 | 12.63 | .00 | .25 |

p<.05

Analysis results regarding the prediction of personal growth initiative by leisure education showed that there was a statistically significant effect on the relationship between leisure education and personal growth initiative ($\beta = .50$; $p < .05$). Considering the values obtained from the regression analysis performed in line with the aim of the study, it can be stated that 25% of the personal growth initiative feature is explained by leisure education.

## Discussion and Conclusion

In the research results that the predictive level of leisure education on personal growth initiative and the change of leisure education and personal growth initiative by various variables, it was determined that the participants exhibited a high level of leisure education and personal growth initiative. Participants who got the highest score in the extrinsic motivation sub-dimension of the leisure education sub-dimensions and the lowest score in the intrinsic motivation sub-dimension were found to have the highest mean scores in the readiness for change sub-dimension in personal growth initiative and the lowest in the using resources sub-dimension.

While the number of students taking leisure education lessons was striking in terms of quantity, it was observed that the participants who stated that they received leisure education despite this numerical disadvantage showed higher leisure education and personal development orientation compared to the participants who did not take leisure education lessons. This result constituted important evidence to reveal the importance of giving leisure education lessons in schools. Studies proved that individuals who participated in leisure education programs or have received leisure education have higher leisure education scores than those who did not participate in these programs as expected (Munusturlar, 2017). It was determined that students participating in leisure education programs, which were considered as a complement to the experiential education programming continued in schools, exhibit more positive psychometric characteristics than those who did not (Jordan et al., 2018).

The increase in the level of education for leisure, which we needed to achieve leisure autonomy (Chang, Yu & Yeng, 2015; Kao & Chang, 2017), to plan, manage and make meaningful use of leisure, was considered to be a unique resource that can directly increase the quality of life of individuals (Arslan, 2010; Desrosiers et al, 2007; Janssen, 2004). Besides, leisure education, which was determined to positively affect physical and mental health, social participation and meaningful personal and social experiences (Meisner, 2019), contributed to the success of university students and providing opportunities for their development (Jordan et al., 2018), and it stands out as a factor that shapes life not only in student life but also in later ages (Carbonneau, Fortier & Joanisse, 2020; Mactavish & Mahon, 2005; Poulin et al., 2019). In this context, leisure education programs contributed to increasing self-esteem (Munusturlar, 2014), gaining self-efficacy (Chino et al., 2019), supporting psychological well-being (Sarle et al., 1998), and reducing stress (Kao & Chang, 2017). Leisure education, which directs life, also, directly and indirectly, affects personal growth initiative. People with a high personal growth initiative tend to evaluate every stage of their lives in a meaningful way. It was also possible to contribute to personal growth by raising the level of education for leisure, which was a free and valuable period leftover from obligations.

Based on the prediction that people who get high scores on the personal growth initiative scale can continue to grow actively and deliberately (Robitschek & Cook, 1999), it was determined that the level of personal growth initiative of the university students participating in the study was high and they consciously began to develop themselves. Although individuals have been found to have a high level of personal growth initiative, the necessity to move personal growth initiative to higher levels is obvious. For students to increase their beliefs about deliberate growth, the current education system should be revitalized by introducing new courses for creativity (Sharma & Rani, 2013). It can be effective to achieve this through leisure education. It was reported that groups lacking various levels of education had a low level of personal growth initiative

(Yüksel Şahin & Taşkın, 2018). According to the researchers (Hutchinson & Shannon, 2020), who argued that an opportunity should be provided to instil leisure education in teaching, research and services, formally or informally, it was essential to plan, schedule, and put participants into action in a viable way.

While there was no significant difference between the gender variable and leisure education and personal growth initiative, it was found that male participants exhibited higher leisure education and personal growth initiative than female participants. In addition to the current results, studies that indicate that gender did not change personal growth initiative (Beri & Jain, 2016; İbili & Uyanık, 2018) performed in the literature, while some studies stated that women showed more personal growth initiative than men (Kaur & Singh, 2017; Malik, Yasin & Shahzadi, 2015, Uslu, 2017; Zaman & Nagvi, 2018). These results raised the idea that women with global disadvantages try more to prepare themselves for life through their growth initiative.

Participants who think that they spend their leisure time productively had high levels of leisure education and personal growth initiative. It confirmed the research hypothesis that the participants who think they had the competence to evaluate their leisure time show more positive results than the participants who did not use their leisure time efficiently and put their personal development into the background.

Moreover, there was no statistically significant difference between the classroom variable and leisure education and personal growth initiative coincides with the assumption that leisure education can be obtained at every grade level, as well as the idea that personal growth initiative can be used equally in every classroom. On the other hand, Robitschek and Cook (1999) argued that the approaches of new university students to increase their growth initiative may cause them to collect more career information from their environment and achieve greater success in developing the concept of professional self.

It was determined that there was a positive and significant relationship between leisure education and personal growth initiative. It was a predictable result that this relationship also contributes positively to the personal growth and personal growth initiative of the participants who had positive gains through leisure education. In a study supporting this result, it was stated that participation in serious leisure activities was closely related to positive outcomes such as personal image and self-expression, improved social relationships and positive social interactions, and it was argued and determined that serious leisure activities can lead to personal growth and happiness (Kim et al., 2015). In another study confirming the same argument, the results showed that individuals can experience personal growth and their perception of health can be improved in a leisure physical activity environment (Kim Et al., 2014).

It was determined that leisure education significantly and effectively predicted personal growth initiative, as leisure education explained personal growth initiative at a rate of %25. It was also revealed in different studies that frequent participation in leisure activities significantly predicts personal growth (Kim et al., 2014). Many studies showed that leisure education had positive effects on individuals' growth processes (Caldwell et al., 2004; Carbonneau, Caron & Desrosiers, 2011; Dattilo et al., 2021; Evans, Hartman & Anderson, 2012; Kao & Chang. , 2017; Munusturlar, 2017; Oncescu, & Neufeld, 2019; Onescu & Neufeld, 2020; Powers et al, 2020; Sarle et al, 1998; Sivan et al., 2020).

According to the results, it was seen that there was a need for programs to increase students' access to leisure education. Starting leisure education courses in the university setting, institutions had the necessary facilities and equipment, but the establishment of such complementary programs will ultimately depend on the institution leaders to make this vision a reality (Hartman, Evans & Anderson, 2017). On the other hand, it was thought that leisure education should start before the university process, and in this direction, it was thought that leisure education should be transferred to the students by getting into the habit, starting with the primary education process. In this context, making changes in education policies, and presenting experimental evidence for academic leisure education and personal growth initiative, were among the suggestions. The

current study was carried out to investigate the leisure education and personal growth initiative of sports science students, and this aspect of the study constitutes the limitation of the research. In future studies, leisure education and personal growth initiative studies on different sample groups will contribute to the field.

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International Online Journal of Educational Sciences

ISSN: 1309-2707

# Investigation of Turkish Teachers' Reading Habits and Attitudes towards Learning

## *Research Article*

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**To cite this article:** Sahin, T. G., & Bayrak, O. (2021). Investigation of Turkish teachers' reading habits and attitudes towards learning, *International Online Journal of Educational Sciences*, *13*(5), 1445-1463.

ARTICLE INFO

*Article History*:

Received: 14.03.2021

Available online: 01.07.2021

ABSTRACT

This study aims to investigate Turkish teachers' attitudes towards reading habits and learning in terms of several variables. This quantitative study utilized a relational screening model. The participants consisted of 241 Turkish teachers serving in schools located in a city in the eastern part of Turkey. The attitude scale regarding reading habits and the attitude scale about learning were administered to the participants. Their attitudes towards reading habits and learning were examined in terms of gender, teaching experience, higher education institution they graduated from, education level, and job satisfaction level. The results revealed that male teachers loved reading more and their reading habits and expectations from learning were higher, compared with female teachers. In addition, teachers with one to five years and 16-20 years of teaching experience had significantly higher scores than those with other years of experience. Moreover, teachers had similar attitudes towards learning and reading habits in terms of the faculty they graduated from. Also, while the teachers with high job satisfaction believed in the necessity of reading books more, the teachers with undergraduate degree believed more in reading and had less anxiety about learning. As the attitudes towards reading habits increased, expectations from learning and openness to learning increased and the nature of learning was better understood. Also, it was concluded that anxiety about learning decreased as attitudes towards reading habits increased. Based on these result, seminars and conferences must be organized by experts in the field regularly in order to increase teachers' awareness in necessity to read books. Another suggestion is to design teachers' room in schools to include mini library, a reading corner or reading chair.



**Keywords:**
Turkish teacher, Reading habit, Attitude towards learning.

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DOI: https://doi.org/10.15345/iojes.2021.05.010

## Introduction

As in the past, today the most effective way to access information is to read. Reading, considered as a critical skill in education, not only enables individuals to reach information but also helps them to gain imagination, creative thinking, and critical perspective. Individuals acquire these skills through different ways due to individual and environmental differences and past experiences. In order to minimize the differences among people, education needs to be considered as a key and teachers need to have sufficient knowledge and skills about reading.

Reading, which is defined as the extraction meaning from written symbols through the co-operation of cognitive behaviors and psychomotor skills (Demirel, 1990: 119) and the process of evaluating and making sense of the signs and symbols perceived by the eye (Özbay, 2007: 4), has a very important place not only in the education process, but also in the self-learning process. In a wider context, Akyol (2005: 1) defines reading as the process of establishing meaning in a regular environment based on effective communication between the writer and the reader by using an appropriate method and purpose.

Changing conditions also differentiated expectations from people. More specifically, today people are expected not to accept information as it is or memorize it, but to interpret, critically think, produce information, and update themselves throughout lifelong learning. Therefore, it is critical to change the type of human who understands and explains himself to the type of human who makes sense of social problems and searches for a solution. In order to achieve this, people should gain the habit of reading books regularly and be raised as creative thinkers (Özbay et al., 2008). A habit is defined as being used to something, attentiveness, intensity, and routine (Turkish Dictionary, 2011: 95). The criteria of reading habits may be measured through what kind of publications a reader reads, how often he reads, which types and to what extent he reads, how much he can read continuously at a time, at what times of the year, week or day he reads, when and what he likes to read, and how he obtains books to read (Dökmen, 1994: 34). Reading habit will emerge when he voluntarily continues the reading activity (Gündüz & Şimşek, 2013: 17).

Although there are many factors that affect reading, the attitude towards reading is also very important. Attitude affects our responses to a situation or an object based on experiences (Turkish Dictionary, 2005: 2014). In this context, it is very important to shape the attitude towards learning positively (CITE), which means that any behavior that parents, teachers or other adults around show towards reading has an impact on children's reading attitudes.

Among teachers, Turkish teachers are the first to come to mind when the topic is related to reading books. While this is a wrong assumption, the main expectation should be that all teachers have acquired the reading habit. All people who earned an undergraduate degree, especially teachers, is expected to be better equipped than other individuals in reading (Topuzkanamış & Maltepe, 2010) and teachers with reading skills may help children gain a reading habit until the age of 15, and, as a result, these children become adults who read throughout their lives (Yalçın, 2006: 54). In this respect, teachers have critical responsibilities. Therefore, it should be ensured that teachers have a reading habit and they put their attitudes towards learning on the right basis. This will enable teachers to help students gain a reading habit. In the literature, conducted studies related to reading skills are mainly focused on either middle school students or teacher candidates and their reading habits. In this study, it is aimed to reveal Turkish teachers' reading habits and attitudes towards learning, which may give insights about in-service teachers' attitudes.

### Objectives of the Study

The main goal of the study is to examine Turkish teachers' attitudes towards reading habits and their competencies in learning in terms of gender, teaching experience, faculty that teachers graduated from, level of education, and job satisfaction variables. The problem statement of the research was determined as "Do

Turkish teachers' reading habits and attitudes towards learning differ in terms of gender, teaching experience, faculty that teachers graduated from, level of education, and job satisfaction variables?"

**Research Questions**

In order to examine the main problem, the answers to the following research questions were addressed in the study:

A) Do teachers' attitudes towards reading habits differ according to the following variables?

a. Gender

b. Teaching experience

c. Faculty that teachers graduate

d. Level of education

e. Job satisfaction level

B) Do teachers' attitudes towards learning differ according to the following variables?

a. Gender

b. Teaching experience

c. Faculty that teachers graduate

d. Level of education

e. Job satisfaction level

C) Is there a relationship between Turkish teachers' attitudes towards reading habits and their attitudes towards learning?

**Importance of the Study**

Reading habit is defined as an important tool that provides personal development, strengthens mind structures, and improves the current position in the social life of individuals (Aydın & Yılmaz: 2006) and the fact that reading is carried out in a continuous, orderly, and critical manner depending on the perception of reading as a need and source of pleasure (Doğanay, 2001). In reading habits, we often encounter regularity and continuity, which refer to reading with one's own motivation and making reading a part of life. Reading and reading and writing are often confused with each other and, therefore, knowing how to read and write is considered sufficient for reading habit. Although many studies reveal that there is an increase in literacy rate in our country, they also show that the level of reading habit is low compared to other countries, which cause a society to emerge as being able to read but not read unless necessary. Teachers have a great role in eliminating this conceptual contradiction because it is easier for teachers who have the habit of reading books to give their students the love and habit of reading books (Gömleksiz, 2004). Yılmaz (1993) also states that the most important factor after the family factor is the teacher in acquiring the reading habit. Accordingly, studies reveal that teachers' reading habit affects their professional and individual development (Şahin, 2011; Tanju, 2010). In order to increase the educational quality, it is important to identify the factors that affect teachers' reading habits and attitudes towards learning. While studies in the literature in regard to reading habits focused on students or teacher candidates, there exist only a few studies focusing on teachers' reading habits. In conclusion, this study aimed to examine Turkish teachers' reading habits and attitudes towards learning in terms of some variables that are considered to be important.

**Theoretical Background and Related Research**

In this section, the theoretical aspects and related literature are introduced.

**Attitude**

Attitude refers to psychologically positive or negative intensity grading of an object or situation (Thurstone, 1931: 249). In other words, attitude is a state of mental and emotional preparation that has a dynamic power or guiding effect in the individual's behavior towards a situation or an object as a result of past experiences (Alım & Bekdemir, 2006: 263-275). This attitude affects individual's thoughts, emotions, and behaviors by harmonizing them with each other (Baykara & Pehlivan, 2008). Therefore, attitude is a tendency that is obtained as a result of experience and shapes the behavior of the individual.

**Attitude towards reading habit**

Reading has many definitions: the process of establishing meaning that use pre-learning, is based on the interaction between the writer and the reader, and is carried out in accordance with a method and purpose (Akyol, 2007a: 1); the process of seeing, perceiving, and comprehending a written text that includes words, sentences, and punctuation marks (Kavcar, Oğuzkan, & Sever: 1997); the translation of written text into sound (Demirel & Şahinel, 2006: 81); a complex activity that is formed by some movements of vision and sound organs and for the mind to grasp the meaning (Cemiloğlu, 2001: 244); and exchange of views between the reader and the writer (Akyol, 2007: 15). The rapid increase of knowledge in the developing and changing world and the fact that science and technology always make necessary changes in human life increase the importance of life-long learning. Individuals must have a reading habit in order to gain lifelong learning skills (Bozpolat, 2010).

Reading habit is a sociocultural skill that is in line with countries' level of development (Mete, 2012). Turner and Paris (1995; cited in Black and Young, 2005) describe the attitude towards reading as feelings that affect the quality and quantity of reading. Alexander and Filler (1976) and Smith (1990: 215; cited in Yamashita, 2004) define it as the increase or decrease in the frequency of reading action and as the mental process accompanied by feelings. Reading habit in a society is an important criterion that determines the level of society-knowledge relationship due to the socialization of information. Since reading is the most basic way to obtain information (Yılmaz, 2002), reading habit is among the criteria of both individual and social development (Yılmaz, Köse & Korkut, 2009).

**Attitude towards learning**

Attitude is a very important concept for understanding people and is a condition that shapes beliefs and emotions on a mental basis. If one believes that he will not be able to learn, this attitude may be an obstacle to learning. At this point, it is important to know that negative attitudes can be changed and turned into a positive attitude and having a positive attitude towards learning is a good start to learning. If a person's psychological tendencies (Chang & Chang 2013: 458), which consist of positive or negative thoughts against the world around him, are positive, then the learning process will progress positively and be successful. According to Chang and Chang (2013: 458), the attitude towards learning expresses the attitude of an individual while learning anything (Chang and Chang, 2013: 458).

Although all the conditions are the same in the learning process, people may not gain the same knowledge due to the individual differences. Specifically, attitudes toward learning greatly affect learning; therefore, measuring attitudes in order to know people's attitude toward an object or a situation is desired in many areas (Kan & Akbaş, 2005).

**Related Research**

Related studies in the literature mainly focused on middle and high school students, teacher candidates including Turkish teacher candidates, and elementary school teachers. However, there exist a limited number of studies that focus on Turkish teachers' reading attitudes and reading habits.

In a study, Demir (2019) examined the reading levels of elementary school teachers and their reading habits in terms of various variables. With this study, it was concluded that different variables affect teachers' reading habit. Kaygas (2019) also conducted a study with students by using Gömleksiz's (2004) questionnaire. Although no significant difference was found in the love, desire, effect and benefit sub-dimensions of the questionnaire in terms of gender, there is a significant difference in favor of female students in the habit sub-dimension. Based on Kaygas' study (2019), the attitudes of female students towards reading habit were higher than that of male students. Similarly, in the research conducted by Koçak, Çermik, Polat and Şahin (2016), the attitudes of teacher candidates towards reading habit differed significantly in favor of females; however, no significant difference was found in terms of other demographic variables. Similar results were found in other studies conducted by Batur, Gülveren and Bek (2010) and Kalyoncu (2013). In Batur and colleagues' study (2010), it was found that teacher candidates had a positive attitude towards reading.

Bozpolat (2010) examined the reading habits and attitudes towards reading of senior teacher candidates. A significant difference was found in favor of female students in the love dimension. Also, it was concluded that habits, necessity, desire, effect, and benefit dimensions did not differ according to gender. In another study, Sevmez (2009) examined the reading habits and library usage of 289 Turkish teacher candidates in his study. According to the findings, almost all of the participants believed that they needed to have a strong reading habit, but some reported that they did not have this habit. In addition, it was found that female teacher candidates read more than male teacher candidates and used the library more frequently. Similarly, Özbay, Bağcı and Uyar (2008) found that there is a significant difference in the attitudes of Turkish teacher candidates towards reading habit according to gender, frequency of reading, and membership to periodicals. Similar findings were revealed by Odabaş, Odabaş ve Polat (2008) and Gömleksiz (2004b). On the contrary, Tunç (2018) found that male elementary school teachers had slightly higher reading scores, comparing with female teachers. He also noted that as the age and teaching experience of elementary school teachers increased, the number of books they read per month increased.

## Methodology

**Research Model**

This quantitative study utilized a relational screening model. In screening model, it is aimed to describe any situation that already exist or already existed in the past (Karasar, 1995: 77). In relational screening model, it examines the relationship between two or more variables (Karasar, 1995: 81). Relational screening is carried out in two ways: the relationship obtained with the comparison method and the correlation type (Karasar, 1995: 81).

**Participants**

The research was carried out in the fall semester of the 2019-2020 academic year with the participation of 241 Turkish teachers working in schools located in a city in the eastern part of Turkey. Demographic information about the participants is provided in Table 1.

**Table 1.** Demographic information about the participants

| | | f | % |
|---|---|---|---|
| Gender | Male | 93 | 38.6 |
| | Female | 148 | 61.4 |
| Teaching experience | 1-5 years | 54 | 22.4 |
| | 6-10 years | 36 | 14.9 |
| | 11-15 years | 72 | 29.9 |
| | 16-20 years | 48 | 19.9 |
| | 21 < years | 31 | 12.9 |
| Faculty that teachers graduated | Faculty of Education | 208 | 86.3 |
| | Educational Institute | 10 | 4.1 |
| | Faculty of Science and Literature | 23 | 9.5 |
| Educational level | Bachelor's degree | 217 | 90 |
| | Graduate degree | 24 | 10 |
| Job satisfaction level | Low | 39 | 16.2 |
| | Medium | 137 | 56.8 |
| | High | 65 | 27 |
| | Total | 241 | 100 |

As seen in the table, 38.6% of the teachers in the study are male and 61.4% are female. In terms of teaching experience, the distribution is equivalent; 86.3% of them graduated from faculty of education, 90% of them had Bachelor degree; and 56.8% of them have moderate job satisfaction.

**Data Collection Tools**

After the literature review, the data collection tools were identified. Two different scales were administered to the participants within the scope of the study: the Attitude Scale Regarding Reading Habits developed by Gömleksiz (2004) and the Attitude Scale about Learning developed by Kara (2010).

The Attitude Scale on Reading Habits (ASRH) developed by Gömleksiz (2004) consists of six dimensions: love, habit, necessity, desire, effect, and benefit. The scale consisting of a total of 40 items is in a five-point Likert type. The options in the scale range from strongly agree to strongly disagree. The internal consistency coefficient of the whole scale was calculated as 0.907.

The Attitude towards Learning Scale (ALS) developed by Kara (2010) consists of four dimensions: nature of learning, anxiety about learning, expectations from learning, and openness to learning. It is in a five-point Likert-type ranging from strongly agree to strongly disagree. There are eleven reverse-coded items. Before the analysis those items were re-coded. The internal consistency coefficient of the whole scale was calculated as 0.672.

**Data Analysis**

In the analysis process, histogram graphs and skewness and kurtosis coefficients of each factor were examined and normality tests were performed in order to determine whether it is suitable for analysis. Except for the anxiety dimension of ALS, the data was not normally distributed. Therefore, while an independent samples t-test and ANOVA was employed for the anxiety sub-dimension, Mann Whitney U and Kruskal Wallis tests were used in all other sub-dimensions. The significance level was accepted as $p < .05$ in all analyses.

## Findings

### Findings Regarding the Effect of Gender

In order to identify any gender differences in teachers' reading habits and attitudes towards learning, an independent samples t-test was conducted. The results are provided in Table 2.

**Table 2.** Independent samples t-test results by gender

| | Gender | n | Mean | SS | t | p |
|---|---|---|---|---|---|---|
| Love | Male | 93 | 30.83 | 4.08 | -3.548 | .000 |
| | Female | 148 | 32.56 | 3.40 | | |
| Habit | Male | 93 | 17.69 | 2.47 | -3.230 | .001 |
| | Female | 148 | 18.62 | 1.95 | | |
| Necessity | Male | 93 | 14.31 | 2.46 | -2.600 | .010 |
| | Female | 148 | 15.06 | 1.97 | | |
| Desire | Male | 93 | 13.64 | 1.82 | -1.148 | .252 |
| | Female | 148 | 13.94 | 2.06 | | |
| Effect | Male | 93 | 18.32 | 2.02 | -.908 | .365 |
| | Female | 148 | 18.60 | 2.48 | | |
| Benefit | Male | 93 | 38.47 | 3.68 | -.656 | .513 |
| | Female | 148 | 38.83 | 4.49 | | |
| Nature of learning | Male | 93 | 30.78 | 4.29 | -.752 | .453 |
| | Female | 148 | 31.19 | 4.02 | | |
| Anxiety about learning | Male | 93 | 31.34 | 9.31 | 1.562 | .120 |
| | Female | 148 | 29.53 | 8.38 | | |
| Expectations from learning | Male | 93 | 39.87 | 5.61 | -3.720 | .000 |
| | Female | 148 | 42.14 | 3.88 | | |
| Openness to learning | Male | 93 | 46.15 | 7.74 | -4.296 | .000 |
| | Female | 148 | 49.73 | 5.21 | | |

Sd=239

According to the results, it was observed that female teachers loved reading (Xmale = 30.83; Xfemale = 32.56; $p<0.05$), had higher reading habits (Xmale = 17.69; Xfemale = 18.62; $p<0.05$), and believed in the necessity of reading (Xmale = 14.31; Xfemale = 15.06; $p<0.05$), comparing with male teachers. Also, female teachers had higher expectations from learning (Xmale = 39.87; Xfemale = 42.14; $p<0.05$) and were more open to learning (Xmale = 46.15; Xfemale = 49.73; $p<0.05$). Accordingly, female teachers had a significantly higher positive attitude than male teachers.

### Findings Regarding the Effect of Teaching Experience

In order to determine whether there was any difference in Turkish teachers' reading habits and attitudes towards learning in terms of their teaching experience Kruskal Wallis test was performed (Table 3).

**Table 3.** Kruskal Wallis H test results based on teaching experience

| | Teaching experience | n | Mean | SS | Mean of squares | $X^2$ | p | Difference |
|---|---|---|---|---|---|---|---|---|
| Love | 1-5 years | 54 | 32.03 | 3.33 | 118.10 | 4.384 | .357 | |
| | 6-10 years | 36 | 31.05 | 4.61 | 108.08 | | | |
| | 11-15 years | 72 | 32.23 | 3.39 | 127.81 | | | |
| | 16-20 years | 48 | 31.29 | 4.55 | 113.43 | | | |
| | 21 < years | 31 | 32.80 | 2.61 | 136.95 | | | |
| | Total | 241 | 31.90 | 3.77 | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Habit | 1-5 years | 54 | 18.31 | 2.15 | 122.83 | 1.280 | .865 |
| | 6-10 years | 36 | 17.83 | 2.88 | 113.03 | | |
| | 11-15 years | 72 | 18.38 | 2.12 | 126.58 | | |
| | 16-20 years | 48 | 18.31 | 2.00 | 116.63 | | |
| | 21 < years | 31 | 18.35 | 2.05 | 120.89 | | |
| | Total | 241 | 18.26 | 2.21 | | | |
| Necessity | 1-5 years | 54 | 14.53 | 2.17 | 114.17 | 6.736 | .151 |
| | 6-10 years | 36 | 14.66 | 2.56 | 120.92 | | |
| | 11-15 years | 72 | 14.93 | 1.74 | 122.51 | | |
| | 16-20 years | 48 | 14.33 | 2.65 | 109.38 | | |
| | 21 < years | 31 | 15.61 | 1.81 | 147.48 | | |
| | Total | 241 | 14.77 | 2.20 | | | |
| Desire | 1-5 years | 54 | 13.96 | 1.68 | 124.49 | 3.247 | .517 |
| | 6-10 years | 36 | 13.16 | 2.86 | 105.35 | | |
| | 11-15 years | 72 | 13.97 | 1.66 | 124.65 | | |
| | 16-20 years | 48 | 13.77 | 2.08 | 117.94 | | |
| | 21 < years | 31 | 14.12 | 1.64 | 129.35 | | |
| | Total | 241 | 13.82 | 1.98 | | | |
| Effect | 1-5 years | 54 | 18.50 | 2.19 | 123.14 | 8.757 | .067 |
| | 6-10 years | 36 | 17.66 | 4.00 | 109.63 | | |
| | 11-15 years | 72 | 18.66 | 1.82 | 123.01 | | |
| | 16-20 years | 48 | 18.29 | 1.79 | 106.55 | | |
| | 21 < years | 31 | 19.35 | 1.05 | 148.18 | | |
| | Total | 241 | 18.49 | 2.31 | | | |
| Benefit | 1-5 years | 54 | 38.44 | 3.85 | 118.13 | 4.790 | .310 |
| | 6-10 years | 36 | 36.63 | 8.38 | 106.00 | | |
| | 11-15 years | 72 | 39.11 | 2.92 | 128.15 | | |
| | 16-20 years | 48 | 39.29 | 1.71 | 120.53 | | |
| | 21 < years | 31 | 39.64 | .83 | 127.53 | | |
| | Total | 241 | 38.69 | 4.19 | | | |
| Nature of learning | 1-5 years | 54 | 29.25 | 4.58 | 91.79 | 15.564 | .004 |
| | 6-10 years | 36 | 30.94 | 4.55 | 119.97 | | |
| | 11-15 years | 72 | 31.68 | 4.20 | 140.41 | | |
| | 16-20 years | 48 | 31.83 | 2.93 | 125.63 | | |
| | 21 < years | 31 | 31.51 | 3.37 | 120.84 | | |
| | Total | 241 | 31.03 | 4.12 | | | |
| Anxiety about learning | 1-5 years | 54 | 33.24 | 9.44 | 143.68 | 12.512 | .014 |
| | 6-10 years | 36 | 28.61 | 9.02 | 107.32 | | |
| | 11-15 years | 72 | 28.09 | 8.18 | 105.19 | | |
| | 16-20 years | 48 | 31.64 | 8.61 | 133.23 | | |
| | 21 < years | 31 | 29.64 | 7.46 | 115.16 | | |
| | Total | 241 | 30.23 | 8.78 | | | |
| Expectations from learning | 1-5 years | 54 | 40.61 | 5.92 | 121.34 | 7.541 | .110 |
| | 6-10 years | 36 | 40.77 | 6.03 | 127.94 | | |
| | 11-15 years | 72 | 42.36 | 3.48 | 134.57 | | |
| | 16-20 years | 48 | 41.00 | 3.62 | 103.19 | | |
| | 21 < years | 31 | 40.87 | 4.70 | 108.40 | | |
| | Total | 241 | 41.26 | 4.74 | | | |
| Open ness | 1-5 years | 54 | 47.37 | 8.11 | 123.05 | 6.744 | .150 |
| | 6-10 years | 36 | 47.83 | 7.56 | 116.07 | | |

| | |
|---|---|
| Nature of learning | 1<3 |
| | 1<4 |
| | 1<5 |
| Anxiety about learning | 1>2 |
| | 1>3 |

| | | | | |
|---|---|---|---|---|
| 11-15 years | 72 | 50.11 | 4.62 | 135.61 |
| 16-20 years | 48 | 47.27 | 5.96 | 102.96 |
| 21 < years | 31 | 48.25 | 6.37 | 117.16 |
| Total | 241 | 48.35 | 6.53 | |

As seen in the table, the differences were significant only in the sub-dimensions of the nature of learning (X2 = 15.564; p<0.05) and anxiety about learning (X2 = 12.512; p<0.05) in terms of teaching experience. The Mann Whitney U test results revealed that teachers with teaching experience of one to five years had significantly lower attitude level towards nature of learning compared to other teachers who had more than 11 years of teaching experience (X1-5 year= 29.25; X11-15 =31.68; X16-20=31.83; X21< =31.51; p<0.05), which may imply that teachers who were new in teaching did not fully grasp the nature of learning. In addition, teachers with teaching experience from one to five years and teachers with teaching experience from 16 to 20 years had more anxiety about learning compared with the others (X1-5 year= 33.24; X6 -10 year= 28.61; X11-15 year=28.09; p<0.05).

**Findings Regarding the Effect of Faculty Graduated from**

In order to determine whether there was a significant difference in teachers' attitudes towards reading and learning in terms of the faculty they graduated from, the Kruskall Wallis and ANOVA tests were conducted for all factors in the data collection tools. The results are provided in Table 4.

**Table 4.** Results related to Kruskal Wallis H test

| | Faculty graduated | n | Mean | SS | K.O. | $X^2$ | p |
|---|---|---|---|---|---|---|---|
| Love | Faculty of Education | 208 | 31.82 | 3.85 | 119.88 | .413 | .813 |
| | Educational Institute | 10 | 32.80 | 1.75 | 127.60 | | |
| | Faculty of Science and Literature | 23 | 32.21 | 3.64 | 128.30 | | |
| | Total | 241 | 31.90 | 3.77 | | | |
| Habit | Faculty of Education | 208 | 18.25 | 2.25 | 121.15 | 4.218 | .121 |
| | Educational Institute | 10 | 19.20 | 1.87 | 155.95 | | |
| | Faculty of Science and Literature | 23 | 17.95 | 1.98 | 104.41 | | |
| | Total | 241 | 18.26 | 2.21 | | | |
| Necessity | Faculty of Education | 208 | 14.80 | 2.14 | 123.51 | 2.513 | .285 |
| | Educational Institute | 10 | 14.40 | 3.30 | 93.55 | | |
| | Faculty of Science and Literature | 23 | 14.60 | 2.23 | 110.20 | | |
| | Total | 241 | 14.77 | 2.20 | | | |
| Desire | Faculty of Education | 208 | 13.78 | 2.02 | 119.85 | 3.574 | .167 |
| | Educational Institute | 10 | 14.80 | .42 | 157.60 | | |
| | Faculty of Science and Literature | 23 | 13.78 | 1.90 | 115.50 | | |
| | Total | 241 | 13.82 | 1.98 | | | |
| Effect | Faculty of Education | 208 | 18.45 | 2.44 | 121.42 | .074 | .964 |
| | Educational Institute | 10 | 18.80 | 1.31 | 116.40 | | |
| | Faculty of Science and Literature | 23 | 18.73 | 1.32 | 119.20 | | |
| | Total | 241 | 18.49 | 2.31 | | | |
| Benefit | Faculty of Education | 208 | 38.55 | 4.49 | 120.69 | .438 | .803 |
| | Educational Institute | 10 | 39.80 | .42 | 131.70 | | |
| | Faculty of Science and Literature | 23 | 39.52 | .94 | 119.20 | | |
| | Total | 241 | 38.69 | 4.19 | | | |
| Nature of learning | Faculty of Education | 208 | 30.79 | 4.32 | 118.28 | 3.566 | .168 |
| | Educational Institute | 10 | 31.80 | 2.04 | 118.10 | | |
| | Faculty of Science and Literature | 23 | 32.86 | 1.79 | 146.87 | | |
| | Total | 241 | 31.03 | 4.12 | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Expectations from learning | Faculty of Education | 208 | 41.18 | 5.01 | 122.98 | 2.308 | .315 |
| | Educational Institute | 10 | 42.70 | 2.11 | 126.80 | | |
| | Faculty of Science and Literature | 23 | 41.39 | 2.58 | 100.57 | | |
| | Total | 241 | 41.26 | 4.74 | | | |
| Openness to learning | Faculty of Education | 208 | 48.38 | 6.78 | 123.43 | 2.318 | .314 |
| | Educational Institute | 10 | 49.40 | 3.89 | 118.05 | | |
| | Faculty of Science and Literature | 23 | 47.56 | 5.07 | 100.28 | | |
| | Total | 241 | 48.35 | 6.53 | | | |

As seen from the table, there were no significant differences in teachers' attitudes in terms of the faculty they graduated from, which shows similar attitudes regarding reading habits and learning. For the anxiety towards learning factor, ANOVA test was conducted (see Table 5). No significant difference was observed in teachers' anxiety towards learning in terms of the faculty they graduated from.

**Table 5.** ANOVA table for faculty teachers graduated from

| | n | Mean | SS | Source of difference | Sum of squares | Sd | Mean squares | F | p |
|---|---|---|---|---|---|---|---|---|---|
| Faculty of Education | 208 | 30.36 | 9.00 | Between groups | 255.748 | 2 | 127.874 | 1.667 | .191 |
| Educational Institute | 10 | 25.40 | 9.07 | Within groups | 18259.239 | 238 | 76.719 | | |
| Faculty of Science and Literature | 23 | 31.13 | 5.69 | Total | 18514.988 | 240 | | | |
| Total | 241 | 30.23 | 8.78 | | | | | | |

**Findings Regarding the Effect of Education Level**

An independent samples t-test was employed in order to identify any differences in teachers' attitude towards reading habit and learning in terms of their educational level. The results are provided in Table 6.

**Table 6.** Independent samples t-test results in terms of educational level

| | Educational level | n | Mean | SS | t | p |
|---|---|---|---|---|---|---|
| Love | BD | 217 | 31.93 | 3.80 | .433 | .665 |
| | MD | 24 | 31.58 | 3.51 | | |
| Habit | BD | 217 | 18.27 | 2.19 | .143 | .887 |
| | MD | 24 | 18.20 | 2.44 | | |
| Necessity | BD | 217 | 14.86 | 2.22 | 2.017 | .045 |
| | MD | 24 | 13.91 | 1.81 | | |
| Desire | BD | 217 | 13.80 | 2.02 | -.551 | .582 |
| | MD | 24 | 14.04 | 1.51 | | |
| Effect | BD | 217 | 18.51 | 2.29 | .357 | .722 |
| | MD | 24 | 18.33 | 2.59 | | |
| Benefit | BD | 217 | 38.75 | 3.96 | .652 | .515 |
| | MD | 24 | 38.16 | 6.01 | | |
| Nature of learning | BD | 217 | 30.92 | 4.22 | -1.259 | .209 |
| | MD | 24 | 32.04 | 2.94 | | |
| Anxiety about learning | BD | 217 | 30.71 | 8.57 | 2.592 | .010 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | MD | 24 | 25.87 | 9.60 | | |
| Expectations from learning | BD | 217 | 41.25 | 4.81 | -.114 | .909 |
| | MD | 24 | 41.37 | 4.15 | | |
| Openness to learning | BD | 217 | 48.26 | 6.66 | -.609 | .543 |
| | MD | 24 | 49.12 | 5.24 | | |

Sd: 239; BD= Bachelor degree; MD= Master's degree

According to the findings obtained, the teachers with Bachelor degree believed significantly more in the necessity of reading (XBD= 14.86; XMD= 13.91; $p<0.05$), comparing with the teachers with Master's degree. Another critical finding is that the teachers with Master's degree had significantly more anxiety about learning (XBD= 30.71; XMD= 25.87; $p<0.05$), comparing with the teachers with Bachelor degree. In other words, the teachers with Bachelor degree had more anxiety when teaching a new subject to students, comparing with the teachers with Master's degree.

**Findings Regarding the Effect of Job Satisfaction**

Another sub-problem of the study is to investigate any difference in teachers' attitude towards reading habit and learning in terms of their job satisfaction levels. To this end, the Kruskall Wallis test and ANOVA test were conducted. The results are provided in Table 7.

**Table 7.** Results related to teachers' job satisfaction

| | Job satisfaction | n | Mean. | SS | KO | $X^2$ | p | Difference |
|---|---|---|---|---|---|---|---|---|
| Love | Low | 39 | 31.61 | 4.72 | 123.24 | .092 | .955 | |
| | Medium | 137 | 32.06 | 3.10 | 119.89 | | | |
| | High | 65 | 31.72 | 4.39 | 121.98 | | | |
| | Total | 241 | 31.90 | 3.77 | | | | |
| Habit | Low | 39 | 18.10 | 2.14 | 113.19 | .955 | .620 | |
| | Medium | 137 | 18.40 | 1.87 | 120.72 | | | |
| | High | 65 | 18.09 | 2.85 | 126.28 | | | |
| | Total | 241 | 18.26 | 2.21 | | | | |
| Necessity | Low | 39 | 13.97 | 2.74 | 104.62 | 9.388 | .009 | 3>1 |
| | Medium | 137 | 14.77 | 1.88 | 115.69 | | | 3>2 |
| | High | 65 | 15.24 | 2.35 | 142.03 | | | |
| | Total | 241 | 14.77 | 2.20 | | | | |
| Desire | Low | 39 | 13.46 | 2.53 | 117.40 | 4.709 | .095 | |
| | Medium | 137 | 13.86 | 1.53 | 115.14 | | | |
| | High | 65 | 13.98 | 2.40 | 135.52 | | | |
| | Total | 241 | 13.82 | 1.98 | | | | |
| Effect | Low | 39 | 18.38 | 1.91 | 112.90 | 2.415 | .299 | |
| | Medium | 137 | 18.56 | 1.87 | 118.38 | | | |
| | High | 65 | 18.41 | 3.23 | 131.38 | | | |
| | Total | 241 | 18.49 | 2.31 | | | | |
| Benefit of learning | Low | 39 | 39.56 | .94 | 127.67 | 2,004 | ,367 | |
| | Medium | 137 | 38.68 | 3.32 | 116.80 | | | |
| | High | 65 | 38.20 | 6.43 | 125.85 | | | |
| | Total | 241 | 38.69 | 4.19 | | | | |
| Nature of learning | Low | 39 | 29.20 | 4.69 | 90.78 | 8.994 | .011 | 3>1 |
| | Medium | 137 | 31.24 | 4.19 | 125.82 | | | 2>1 |
| | High | 65 | 31.69 | 3.28 | 128.96 | | | |
| | Total | 241 | 31.03 | 4.12 | | | | |
| Expectations from learning | Low | 39 | 40.89 | 5.08 | 117.64 | 8.869 | .012 | 3>2 |
| | Medium | 137 | 40.64 | 5.16 | 111.86 | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | High | 65 | 42.80 | 3.05 | 142.28 | | | |
| | Total | 241 | 41.26 | 4.74 | | | | |
| Openness to learning | Low | 39 | 47.33 | 7.49 | 113.95 | 9.198 | .010 | 3>1 |
| | Medium | 137 | 47.61 | 6.73 | 112.42 | | | 3>2 |
| | High | 65 | 50.52 | 4.87 | 143.32 | | | |
| | Total | 241 | 48.35 | 6.53 | | | | |

According to the results, teachers with high job satisfaction believed in the necessity of reading books significantly (X2 = 9.388; p<0.05) more than teachers with other job satisfaction levels. In addition, it was also observed that teachers with medium and high job satisfaction level understood the nature of learning more than the teachers with low level of job satisfaction (X2 = 8.994; p <0.05). Another critical finding is that teachers with high level of job satisfaction had more expectations from learning comparing with the ones with medium level of job satisfaction (X2 = 8.869; p <0.05) and they were more open to learning when compared with the teachers with low or medium job satisfaction level (X2 = 9.388; p <0.05).

**Findings Regarding the Association between Reading and Learning Habits**

In order to determine whether there was a significant relationship between the attitudes of Turkish teachers towards reading and learning, the Pearson Correlation test was conducted (see Table 8).

**Table 8.** Correlations between the factors

| | | Habit | Necessity | Desire | Effect | Benefit | Nature of learning | Anxiety about learning | Expectations from learning | Openness to learning |
|---|---|---|---|---|---|---|---|---|---|---|
| Love | r | .654** | .523** | .571** | .538** | .520** | .151* | -.197** | .323** | .359** |
| | p | .000 | .000 | .000 | .000 | .000 | .019 | .002 | .000 | .000 |
| Habit | r | 1 | .324** | .512** | .432** | .521** | .187** | -.200** | .259** | .302** |
| | p | | .000 | .000 | .000 | .000 | .004 | .002 | .000 | .000 |
| Necessity | r | | 1 | .517** | .525** | .394** | .106 | -.112 | .311** | .292** |
| | p | | | .000 | .000 | .000 | .102 | .083 | .000 | .000 |
| Desire | r | | | 1 | .490** | .529** | .070 | -.127* | .321** | .282** |
| | p | | | | .000 | .000 | .278 | .049 | .000 | .000 |
| Effect | r | | | | 1 | .786** | .215** | -.164* | .322** | .300** |
| | p | | | | | .000 | .001 | .011 | .000 | .000 |
| Benefit | r | | | | | 1 | .226** | -.052 | .261** | .203** |
| | p | | | | | | .000 | .424 | .000 | .002 |
| Nature of | r | | | | | | 1 | -.250** | .559** | .429** |
| learning | p | | | | | | | .000 | .000 | .000 |
| Anxiety about | r | | | | | | | 1 | -.446** | -.626** |
| learning | p | | | | | | | | .000 | .000 |
| Expectations | r | | | | | | | | 1 | .798** |
| from learning | p | | | | | | | | | .000 |

According to the results, there is a high level of correlation between the factor of love and the habit (r =. 654). the necessity (r =. 523), the desire (r =. 571), the effect (r =. 538), and the benefit (r =. 520) factors. Therefore, an increase is expected in all these factors if one loves reading more. In addition, there is a moderate and positive correlation between the love factor and the nature of learning (r =. 151), expectations from learning (r =. 323), and openness to learning (r =. 359) factors. In other words, teachers who love to read are expected to

understand the nature of learning better, to increase their expectations from learning, and to be more open to learning. Moreover, teachers who love to read books are expected to have less anxiety about learning (r = -. 197).

The habit factor is correlated with the necessity (r =. 324), the desire (r =. 512), the effect (r =. 432), the benefit (r =. 521), and the openness to learning (r =. 302) factors at a moderate level. Also it is correlated with the nature of learning (r =. 187) and expectations from learning (r =. 259) factors at a low level. Accordingly, as the reading habit increases, an increase in all those factors mentioned above is expected. On the other hand, there is a moderate and negative correlation between the habit and the anxiety about learning factors (r = -. 200). Thus, as the reading habit increases, anxiety about learning is expected to decrease.

As the attitudes towards the necessity of reading books increase, it positively affects the desire (r =. 517), the effect (r =. 525), the benefit (r =. 394), expectations from learning (r =. 311), and openness to learning (r =. 292) factors. Accordingly, teachers who believe in the necessity of reading books are expected to be willing to read more, believe in the effectiveness, and the benefit of reading, have higher expectations from learning and be more open to learning.

The desire factor is highly correlated with the effect (r =. 490) and the benefit (r =. 529) factors and moderately correlated with the expectations from learning (r =. 321) and the openness to learning (r =. 282) factors. On the other hand, it is negatively correlated with the anxiety about learning factor (r = -. 127). Therefore, when teachers are willing to read more books, they are expected to believe in the effect and the benefit of reading and more open to learning.

The results revealed that there is a very high level of relationship between the effect and the benefit factors (r =. 786) and a moderate relationship between the effect and the nature of learning (r =. 215), expectations from learning (r =. 322), and openness to learning (r = 0.300) factors. Also, a negative and low level correlation was observed between the effect of reading and anxiety about learning (r = -. 164) factors. Accordingly, as teachers believe in the effect of reading more, they believe in the effect of reading and the nature of learning more, their expectations from learning increase, they are more open to learning and their anxiety about learning decreases.

There is a low level of relationship between the benefit factor and the nature of learning (r =.226), expectations from learning (r =.261) and openness to learning (r =.203) factors. According to this, as teachers believe that reading books is beneficial, their expectations from learning increase and they are more open to learning.

While attitudes towards the nature of learning are negatively associated with anxiety about learning (r = -.250), it has high level of relationship with expectations from learning (r =.559) and openness to learning (r =.429). Thus, as the nature of learning is understood, anxiety about learning decreases, and the expectations from and openness to learning increase.

There is a high and negative relationship between the anxiety about learning and the expectations from learning (r = -.446) and the openness to learning (r = -.626) factors, which means that as the anxiety about learning increases, the expectations from and openness to learning decrease.

There is a high level of relationship between teachers' expectations from learning and their openness to learning (r =.798). This means that as the expectations from learning increases, the openness to learning increases.

## Discussion and Recommendation

### Reading and Learning Habits and Gender

In this study, where Turkish teachers 'reading habits and attitudes towards learning were examined, a gender difference was observed. The findings revealed that male teachers enjoyed reading, believed in the necessity of reading, and had reading habits, had expectations from learning and were open to learning more than female teachers. This implies that male Turkish teachers had significantly more positive attitude toward learning, comparing with female teachers. Although it was not statistically significant, Tunç (2018) found that male teachers had slightly higher reading attitude scores than female teachers, which supports the findings of the current study. This is might be due to female teachers' workload not only at schools but also at home. In his study, Aslantürk (2008) states that female teachers are not able to find time due to their responsibilities and, therefore, do not read enough books. On the other hand, there exist opposite findings in the literature. Many studies show that women's reading attitude scores are generally higher than men (Kaygas, 2019; Demir, 2019; Şenyiğit, 2016; Arı & Demir, 2013; Hopper 2005; Logan & Johnston, 2009; Engin & Koç, 2015; Gömleksiz, 2004; İşeri, 2010; Özbay, Bağcı & Uyar, 2008). Based on the opposite findings in the literature, it may be stated that gender is a critical factor that affects reading habits and females have more positive attitude towards reading books, comparing with males. Considering the findings related to the gender differences in the current study, it is concluded that the average score of reading attitude in favor of men is a remarkable result in the study.

### Reading and Learning Habits and Teaching Experience

The second sub-problem of the study is about determining whether there is a significant difference in Turkish teachers' reading habits and attitudes towards learning in terms of their teaching experience. The results revealed that the attitudes of teachers with less than five-year teaching experience towards nature of learning were significantly lower than that of other teachers. In addition, teachers with 1-5 years of teaching experience and teachers with 16-20 years of experience had higher scores comparing with the others. Similar results were found in Tunç's study (2018). Tunç found that the difference was between the teachers with 16-20 years and the ones with 26 years and above teaching experience. There are also studies in the opposite direction. Demir (2019) and Aslantürk (2008) found no significant difference in teachers' attitudes towards reading in terms of their teaching experiences.

### Reading and Learning Habits and Faculty Teachers Graduated from

Another sub-problem of the study is to determine any significant difference in the attitudes of Turkish teachers towards reading and learning in terms of the higher education institution (Faculty of Education, Education Institute, Faculty of Arts and Sciences) they graduated. According to the findings, no significant difference was observed. Although there is no similar study on Turkish teachers, it was determined that the reading attitude scores of the elementary school teachers did not change significantly in terms of the higher education institution they graduated from (Tunç, 2018). However, in the same study, it was concluded that teachers who graduated from the Education Institute read more books than teachers who graduated from other faculties.

### Reading and Learning Habits and Education Level

In the fourth sub-problem of the study, any possible difference in the attitudes of Turkish teachers towards reading and learning was investigated in terms of their educational level. The results revealed that teachers with Bachelor degree believed in the necessity of reading books and had less anxiety about learning, compared with the other teachers.

**Reading and Learning Habits and Job Satisfaction**

In this study, it was investigated whether there is a significant difference in Turkish teachers' attitudes towards reading and learning in terms of their job satisfaction levels. According to the results, teachers with high job satisfaction believed in the necessity of reading books more, understood the nature of learning better, had more expectations from learning and were more open to learning, comparing with the others. In another study, Tunç (2018) stated that teachers with high job satisfaction are who reads publications about their profession read enough books.

**Association between Reading and Learning Habits**

In the study, correlations among factors were examined. Based on the results, seven important findings were observed. The first finding is related to the love of reading. According to the results, teachers who love reading also have reading habit, believe in the necessity of reading, and desire to read. In addition, teachers who love to read better understand the nature of learning, their expectations from learning increase, and they are more open to learning. Moreover, it is also observed that teachers who love to read books have less anxiety about learning. The second finding is related to the attitudes towards reading habits. The attitude towards reading has a moderate relationship with the necessity for reading, desire to read, the effect of reading, the benefit of reading, and openness to learning and has a low relationship with the nature of learning and expectations from learning. In other words, as the reading habit increases, there will be an increase in all the sub-dimensions mentioned above. On the other hand, there is a moderate and negative correlation between reading habit and anxiety about learning, which means that as the reading habit increases, anxiety about learning decreases. The third finding is about the necessity of reading a book. Teachers who believe that reading is necessary are expected to desire to read, believe in the benefit of reading, and be more open to learning. The fourth finding is that as the teachers are willing to read more, they tend to believe the effect and the benefit of reading more, have higher expectations from learning, and be more open to learning. Another finding is also related to the high correlation between the effect of reading and the benefit of reading. As teachers believe in the effect of reading, it is expected that they believe in the benefit and the nature of reading, have more expectations from learning, are more open to learning, and have less anxiety towards learning. The next finding revealed that teachers who believe in the benefit of reading have higher expectations from learning and are more open to learning. The last finding is related to the effects of anxiety towards learning on expectations from learning and openness to learning. There is a high level of relationship between the expectations of teachers from learning and their openness to learning. Also, as the expectations from learning increase, the openness to learning also increases. According to these results, it is concluded that the reading habits in a general sense are significantly and positively related to the attitude towards learning. In fact, as the attitudes towards reading habits increase, expectations from learning increase, the nature of learning is better understood, and openness to learning increases. In addition, it was concluded that anxiety about learning decreases as attitudes towards reading habits increase.

**Recommendation**

Based on the findings of the study, the following recommendations are forwarded:

1. In order to increase the reading interests and habits of teacher candidates, Ministry of National Education and Council of Higher Education and the other stakeholders should organize more ”Reading Activities”, “Book Fair”, “Interview with Authors”, “Reading Contests”, “Culture and Information Contests” organizations.

2. Considering the fact that we are behind many developed countries in reading habit and reading culture, the reasons should be investigated. After the identification of the reasons, social projects for advancement need to be implemented.

3. In order to increase teachers' awareness on reading books, seminars and conferences must be organized by experts in the field.

4. On a regular basis, teachers must be provided a list of books that they may read via MEBBIS.

5. In schools, especially in the teachers' room, there must be a mini library, reading corner or reading chair.

6. Authors must be invited to schools in order to increase awareness of teachers and students in terms of reading.

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**Internet Resource**

http://www.esoder.org sayfasından, Erişim tarihi: 10.01.2020

iojes
www.iojes.net

International Online Journal of Educational Sciences

ISSN: 1309-2707

# The Effect of Gender on Student Burnout: A Meta-Analysis Study

*Research Article*

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**To cite this article:** Kalkan, F., & Dagli, E. (2021). The effect of gender on student burnout: A meta-analysis study, *International Online Journal of Educational Sciences, 13*(5), 1464-1485.

ARTICLE INFO

*Article History*:

Received: 18.04.2021

Available online: 10.11.2021

ABSTRACT

This study aims to examine the effect of gender on student burnout using the meta-analysis method. Within the scope of the research, it was aimed to reveal the size and direction of the gender difference in student burnout. Besides, it was aimed to determine the variables that had a moderating effect on the relationship between gender and student burnout. By the selection criteria of the research, a total of 23 studies have been included in the meta-analysis. The sample of the study consists of 43.656 students, 21.398 girls, and 22.258 boys. The "Hedges g" value was calculated to determine the effect size. As a result of the process of combining the individual effect sizes of the studies in the random-effects model, an effect size (g = -.048) was obtained at a weak level and in favor of male students. Besides, it was concluded that the effect sizes differ according to the scale type. In other words, the research results show that the scale type has a moderating effect on the relationship between gender and student burnout.



**Keywords:**
Gender, School burnout, Student burnout

## Introduction

The concept of burnout was first introduced by Freudenberger (1974) in order to explain the situations of failure, wearing out, and becoming exhausted seen in professionals who interact with people intensely. According to Freudenberger (1974), individuals working in such jobs work too much, too long, and too intensely to meet the needs of others. They feel internal and external pressure to work and help. On the other hand, a third pressure factor occurs when individuals demand from their managers to work more. Individuals who have difficulty in fulfilling the extreme demands of the job or who feel intense pressure on this issue may experience burnout (Freduenberger 1974). Burnout was initially addressed as a condition-specific to occupational workers who interact extensively with people. However, the scope of the concept of burnout was

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DOI: https://doi.org/10.15345/iojes.2021.05.011

expanded with the observation of similar situations in employees who do not interact with other people intensively. With the emergence of burnout not only in business life but also in all areas, the concept has begun to be discussed more comprehensively in the literature. Maslach and Jackson (1981) stated that burnout has dimensions of depersonalization and personal accomplishment in addition to the emotional exhaustion suggested by Freudenberger (1974). According to them, employees who are emotionally exhausted have a low perception of success, cannot give themselves to work on a psychological level, have negative thoughts towards individuals, and are unhappy and dissatisfied with their duties. Individuals experiencing burnout have a low perception of personal accomplishment or feeling of inadequacy. Pines and Aronson (1988) define burnout as a state of physical, emotional, and mental exhaustion caused by long-term involvement in situations that are emotionally demanding (as cited in Enzmann, Schaufeli, Janssen, & Rozeman, 1998).

Nowadays, students spend most of their daily lives at school and prepare for exams under intensive education programs from the beginning of their education and training life until they gain a profession. Students experience an intense tempo in terms of both school lessons and preparing for central exams (Özdemir, 2015). Depending on the results of the central exams, students are expected to be successful in these exams, since they will move to a higher education level. Besides, the intense tempo, the pressure the student experiences from his / her teachers, family, or environment to meet this expectation can cause stress (Deb, Strodl & Sun, 2015; Reddy, Menon & Thattil, 2018; Seçer & Gençdoğan, 2012). Stress is one of the causes of burnout (Çam, Deniz, & Kurnaz, 2014; Mousavi, Ramezani, Salehi, Hossein Khanzadeh, & Sheikholeslami, 2017). Because burnout occurs when mental, emotional and physical limits are reached due to excessive and long-term stress (Queen & Harding, 2020). In this direction, students can experience burnout just like employees. In the literature, by establishing a similarity between work and school, it is tried to both clarify this feeling of burnout experienced by the student and to conceptualize the burnout peculiar to students. Considering that students attend school five days a week just like employees, have duties and responsibilities related to the school, and the school and families expect them to fulfill these duties and responsibilities, being a student is considered a job (Aypay & Sever, 2015; Chambel & Curral, 2005; Lee, Puig, Kim, Shin, Lee, & Lee, 2010; Rahmati, 2015; Salanova, Schaufeli, Martinez, & Bresó, 2009; Salmela-Aro, Savolainen, & Holopainen, 2009). The burnout of students has been conceptualized and defined in different ways as school-related burnout (Salmela-Aro, Kiuru, Pietikïnen, & Jokela, 2008), student burnout (Yang, 2004), academic burnout (Rahmati, 2015), school burnout (Aypay, 2011; Kiuru, Aunola, Nurmi, Leskinen, & Salmela-Aro, 2008; Salmela-Aro, Kiuru, & Nurmi, 2008). In order not to cause confusion and to look at it from a more general perspective, the burnout experienced by students concerning the school can be evaluated as "student burnout". Burnout in students means that the student feels exhausted due to intense pressure from family and school to work harder, has a cynical and indifferent attitude towards work, and has a perception of inadequacy as a student (Schaufeli, Martinez, Pinto, Salanova, & Bakker, 2002). Student burnout refers to the emotional exhaustion of the student in the learning process due to lesson stress, course load, or other psychological factors, to show depersonalization and to have a low sense of personal accomplishment (Yang & Farn, 2005). Student burnout is closely related to psychological and physiological problems. For example, student burnout is associated with increased depression symptoms (Gerber et al., 2013; Nazar, Österman, & Björkqvist, 2020; Salmela-Aro, Kiuru, Leskinen, & Nurmi, 2009) and anxiety (Nazar et al., 2020); decreased life satisfaction, mental resilience and sleep quality (Gerber et al., 2013). However, studies show that student burnout may be related to some problems related to school. As student burnout increases, school engagement (Fiorillia, De Stasioa, Chiacchio, Pepe, & Salmela-Aro, 2017; Salmela-Aro et al., 2009), school belonging (Xie & Xiao, 218), academic achievement (Fiorillia et al., 2017; Salmela- Aro et al., 2009), academic motivation (Seçer, 2015) decreases. Besides, as school burnout increases, there are an increase in students' alienation from school (Polat, 2018) and academic procrastination tendencies (Balkıs, 2013). The results of the research conducted by Bask and Salmela-Aro (2013) on secondary school students to reveal the development of school burnout draw attention to the

relationship between school burnout and drop out. The results of the study reveal that those with a high level of cynicism towards school are almost four times more likely to drop out than those with a low level of cynicism, and those with a high sense of inadequacy as a student are almost three times more likely to drop out than those with a low level of such feelings (Bask & Salmela-Aro, 2013).

Student burnout is perceived as a phenomenon specific to students studying only at primary and secondary education levels due to its association with the school. However, higher education students are also likely to experience burnout. The process of adaptation to higher education can be considered as a turning point for students personally, socially, and academically (Duru, 2008). In this process, students may experience problems in various areas while ensuring their personal development through new experiences (Küçüksüleymanoğlu & Onuray Eğilmez, 2013). For example, some of these areas are economic problems, orientation problems, academic problems, problems arising from friendship relations, family problems, etc. (Donat, Bilgiç, Eskiocak, & Koşar, 2019; Kacur & Atak, 2011; Topkaya & Meydan, 2013; Şahin, Şahin Fırat, Zoraloğlu & Açıkgöz, 2009). Unlike students at other education levels, university students face these problems, which may cause them to be stressed and thus experience burnout. Studies on student burnout at higher education level reveal that university students also experience burnout (Backović, Ilić Živojinović, Maksimović, & Maksimović, 2012; Çelik & Üstün, 2017; Demirdağ, 2016; Doğan, 2016; Gündüz, Çapri, & Gökçakan; 2012; Portoghese et al., 2018; Rahmati, 2015).

Considering that student burnout can be seen at all levels of education and its negative impact on educational achievement as well as the psychological health of students, early detection of students at risk of burnout and warning of educators on this issue is very important. In this context, it is necessary to determine the individual and environmental factors that affect student burnout and to direct the guidance studies to be carried out throughout the school. Although environmentally-focused studies will generally contribute to preventing or reducing the burnout of all students, they may be insufficient for students with high burnout levels or risk. For this reason, more studies are needed that focus on individual factors. The common point of many studies conducted with the individual factor is the "gender" variable (Acar & Çakır, 2015; Backović et al., 2012; Gündüz et al., 2012; Naçar, Baykan, & Çetinkaya, 2012; Templeton et al., 2019). It is even possible to encounter meta-analysis studies that reveal the gender difference in burnout levels of employees (Kış, 2015; Purvanova & Muros, 2010). In the literature, it is seen that meta-analysis studies on student burnout are also conducted (Frajerman, Morvan, Krebsa, Gorwoodb, & Chaumette, 2019; Erschens et al., 2019; Pacheco, et al.2017). These studies do not provide information about general student burnout since they are conducted to reveal the burnout level of medical students. Although they are carried out for a wide period, they do not cover the studies after 2017. In addition, these studies do not reveal which variables are effective in the relationship between gender and student burnout. However, there may be some variables that have a moderating effect on the relationship between gender and school burnout:

a) As a matter of fact, due to the COVID-19 epidemic, the distance education program was started. With the transition to distance education, different teaching methods and materials have been used. Naturally, students are expected to adapt to the new teaching system and teaching methods, in other words, to acquire new knowledge, skills, and gains brought by change. This situation may have led to differences in the level of burnout experienced by students. It is necessary to determine whether the study year has a moderating effect on the relationship between gender and student burnout.

b) Walburg's (2014) literature review on student burnout in different geographical regions shows that the phenomenon of burnout is not geographically or culturally limited. Barriers to children's enrollment in school may differ between countries and even within countries. Poverty, armed conflict, geographic distance, lack of school infrastructure and poor-quality education are the most common barriers. Moreover, these barriers foster gender inequality for marginalized girls (UNICEF, 2020). This

situation may have caused differences in the level of burnout experienced by students studying in countries with these disadvantages in terms of the continent. It is necessary to determine whether the continent where the study was conducted has a moderating effect on the relationship between gender and student burnout.

c) Individuals go through different stages of development from primary education to higher education. However, the gains that students should achieve depending on their progress in education levels increase. The student's efforts to adapt to the characteristics of the developmental stage on the one hand and to meet the expectations of the school on the other may have been effective at the level of burnout s/he experienced. On the other hand, the differentiation of the aims of education according to the levels is naturally reflected in the education programs. Especially in the second phase of secondary education, more various programs can be applied compared to other education levels. The incompatibility between the interests and abilities of the individual and the requirements of the program of the second phase of secondary education may have led to differences in the level of burnout experienced by students. For example, in the study conducted by Salmela-Aro, Kiuru, and Nurmi (2008), it was revealed that adolescents on an academic track experienced more exhaustion at school than those on a vocational track. Besides, at the end of the second phase of secondary education, depending on the success of the students, there is a transition to higher education. This may be an important factor in the burnout experienced by students. For this reason, it is necessary to determine whether the education level in which the study was conducted has a moderating effect on the relationship between gender and student burnout.

d) In the literature, it is known that the Maslach Burnout Inventory (MBI), which was developed by Maslach and colleagues (Maslach & Jackson, 1981, 1986; Maslach, Jackson, & Leiter, 1986), was first used to determine the level of burnout of students. The scale in question mainly aims to reveal the burnout status of the employees in organizations. For this reason, the idea that a scale for students can be developed over time has emerged and different measurement tools have been developed. The scales were restructured in different dimensions, but compatible with the institutional structure, specific to the educational levels. For example, the "Secondary School Burnout Scale (SSBS)" developed by Aypay (2012) aims to reveal the burnout status of high school students directly and has a different structure than "MBI". This situation may enable the differences in the level of burnout experienced by students to be seen more clearly. It is necessary to determine whether the scale type used in the study has a moderating effect on the relationship between gender and student burnout.

In line with these limitations and reasons, it can be said that a current synthesis of studies that reveal the effect of gender on student burnout; a meta-analysis is needed. Investigating the effect of moderator variables on the relationship between gender and school burnout will provide important information to the literature about whether the effect differs according to the moderator variables or, if there is, the direction and extent of the difference. The fact that the research will reveal how student burnout in general differs by year, continent, education level and scale type may help to evaluate the factors affecting burnout in a global context. This study can provide information to researchers about which moderator variables should be taken into consideration in future studies focusing on individual variables other than gender, which are thought to affect student burnout. In the light of the information obtained as a result of the research, education politicians and administrators can make decisions and plans about which support should be provided to reduce student burnout and which students have priority in the support to be provided. This study aims to examine the effect of gender on student burnout using the meta-analysis method. In line with this main purpose, the sub-problems of the research were determined as follows:

1. What are the frequency and percentage distributions regarding moderator variables of the studies included in the meta-analysis?

2. What is the combined effect size that gives the effect of gender on student burnout?
3. Is there a significant difference between the effect sizes of the studies examining students' burnout levels in terms of gender variable according to moderator variables (year, continent, education level, and the scale type)?

## Method

The meta-analysis method was used in the research. "Meta-analysis is the grouping of similar studies about a subject, theme, or field of study under certain criteria and interpreting the quantitative findings of these studies by combining" (Dinçer, 2014, p.4). "Meta-analysis collects quantitative results from many studies and makes inferences about the overall effect between studies" (Şen & Yıldırım, 2020, p.4). "The results of a meta-analysis can improve the precision of estimates of effect, answer questions not posed by the individual studies, settle controversies arising from apparently conflicting studies, and generate new hypotheses" (Haidich, 2010, p.30).

### Selection of Data (Studies)

In this study, the following criteria were taken into account in determining the studies to be included in the meta-analysis: (1) The studies were published in peer-reviewed journals in 2016-2021, (2) They were conducted on students studying at primary (2nd phase) or secondary education levels, (3) They were written in English in full text, (4) They are in Google Academic database, (5) They have numerical data on sample sizes, arithmetic means and standard deviation values of female and male student groups.

First of all, the year, language, and citation limitation has been made in the database. Then, a search was made using the keywords "students" and "burnout", "student burnout", "school burnout" and "academic burnout" in the article title. It is possible to come across a large number of studies on the subject when searching the database by entering keywords. For example, it is seen that 932 studies were conducted as a result of a search in the Google Academic database covering the years 2016-2021, written in English, containing both words "students" and "burnout" in the article title, and not including citations. Due to a large number of studies, the following method was used in the creation of meta-analysis data: In the first stage, a data set was formed by determining studies considered to be suitable in terms of subject, method, and sample among the research titles or abstracts. In the second stage, studies whose full text was not in English were removed from the data set. In the third stage, studies that did not have the necessary statistical information to calculate the effect size were removed from the data set. As a result of these stages, 23 studies were found to meet the desired criteria.

### Preparation of Data for Analysis

In meta-analysis research, it is necessary to make some studies to create a data set and determine the suitability of the data for analysis before the analysis. The studies done to prepare the data for analysis is explained in detail below.

*Creating the coding form*

The coding form developed by the researchers, consisting of three parts: study identity, content, and data, was used to create the data set for meta-analysis. In the identity section of the study, information about the author(s) and years of the studies are given. Information on the continent, education level, and the scale types used in the studies are included in the study. Information on the numerical data (the sample size, arithmetic mean, and standard deviation) required to calculate the effect sizes are included in the study data section. Based on the data in the coding form, the moderator variables of the study were determined as the year, the continent, the education level, and the scale type. The researchers filled out the coding forms independently. The reliability formula [reliability = number of agreements / (total number of agreements +

disagreements)] proposed by Miles and Huberman (1994, p.64) was used to determine the reliability of the researchers' coding for the moderating variables, in other words, the research. It was observed that the reliability coefficients obtained for the variable varied between 74% and 100%, and the coding was accepted to be at a reliable level for the research since the reliability calculations were above 70% and were accepted as reliable for research (Miles & Huberman, 1994). However, the following studies were carried out to increase the reliability of the research: First of all, the moderator(s) with which the researchers disagreed were determined. For example, the moderator with the highest disagreement among researchers is education level. The biggest factor underlying disagreement is that the secondary education level differs from country to country. The general definition of secondary school was taken into account to ensure unity between the codes: A secondary school defines an institution that provides secondary education. Some secondary schools provide both lower secondary education (12 to 15 years old) and upper secondary education (15 to 18 years old) corresponding to Levels 2 and 3 of the International Standard Classification of Education ("Secondary Education", 2021). Then, the age range, grade level, and education level of the sample group of the studies included in the meta-analysis were examined, and the education levels were re-coded according to the International Standard Education Classification. As a result of the re-coding, the reliability of the research for the education level was calculated as 91%. Finally, the coding with the disagreement was re-coded in line with the common decision of the researchers and the final data set was created.

*Calculation of the effect sizes of the studies*

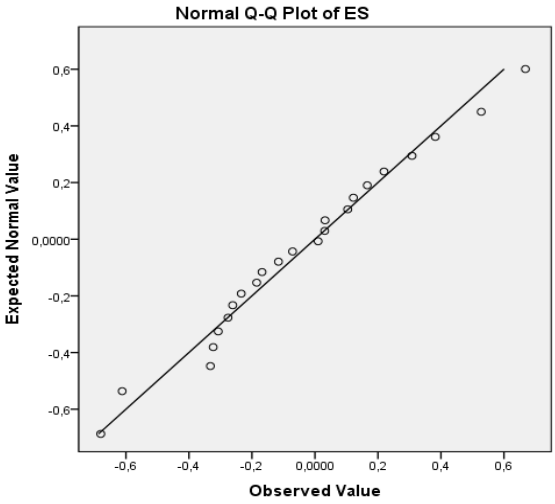
"The sample estimate of the standardized mean difference is often expressed by Cohen d in research syntheses" (Borenstein, Hedges, Higgins, & Rothstein, 2013, p.27). Hedges' $g$ is considered less biased than Cohen's d within studies when the effect size is the standardized mean difference (Hedges and Olkin, 1985, p.81; as cited in Lin, 2018). So, in this study, a standardized effect size type "Hedges $g$" was used. Statistical values regarding individual effect sizes, combined effect sizes, and publication bias of the studies were calculated with the help of the Comprehensive Meta-Analysis v2.2.064 (CMA) Statistical Package program.

*Examining the distribution of effect sizes of studies*

In meta-analysis studies, it is examined whether the effect sizes have a normal distribution or not. The fact that the distribution is normal indicates that the study data can be used in calculating the total effect size (Rosenberg, Adams, & Gurevitch, 2000, as cited in Dinçer, 2015). It can be difficult to make a fair comparison between an effect size based on normal distributions and an effect size based on non-normal distributions. Because there may be a significant difference between the standard errors of two groups with the same effect size, normally and not normally distributed (Coe, 2002). Therefore, care should be taken in interpreting effect sizes in cases where normal distribution is not provided.

In the study, first of all, the control of the extreme values in terms of individual effect sizes obtained from the overall scales was made according to the univariate normality analysis ($Z$ scores). Based on the basic assumption that Z scores are between -3 and 3 (Çokluk, Şekercioğlu, & Büyüköztürk, 2012; Seo, 2006), it was seen that the effect size of no study was not extreme value.

Normal Q-Q graph, kurtosis and skewness coefficients, Kolmogorov-Smirnov test results were used to determine whether the individual effect sizes of the studies had a normal distribution. The distribution of the effect sizes of the studies is presented in Graphic 1.




**Graphic 1.** Distribution of the effect sizes of the studies

When Graphic 1 is examined, it is seen that some of the effect sizes obtained from the overall scales are located outside the x = y line. Since a decision based on the normal Q-Q chart that the data has a linear structure or not is subjective (Can, 2013), the kurtosis and skewness coefficients were calculated to determine the normality of the distribution, and normality tests were performed. The kurtosis coefficient, skewness coefficient, and Kolmogorov-Smirnov test statistics were calculated as -.030 (std. Error = .935), .213 (Std. Error = .481), .107 ($p$ = .200), respectively. The ratio of the scores of the skewness and kurtosis coefficients to the standard error is in the range of +1.96 to -1.96 (Can, 2013) and the Kolmogorov-Smirnov test result is not statistically significant, indicating that the effect sizes have a normal distribution.

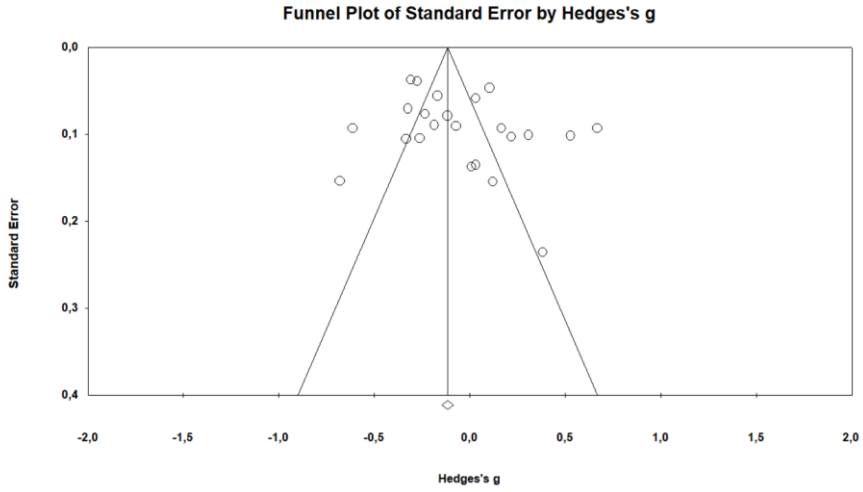
*Calculation of weight of studies*

In the meta-analysis, if a study with a large study weight compared to other study weights causes a significant difference in overall effect size, it will be useful to exclude this study from the analysis and explain this situation in detail (Dinçer, 2014). To determine whether there was a study that caused the said situation, study weights were examined according to the random-effects model. It has been observed that the weights of the studies show a relatively balanced distribution.

*Examining the publication bias of the studies*

"Studies that fail to reject the null hypotheses-studies without statistically significant results (negative studies)-are less likely to be published than studies that show apparent differences between the experimental and control interventions (positive studies)" (Montori, Smieja, & Guyatt, 2000, p.1284). "Publication bias occurs when the probability of publishing a result of a study is influenced by the result obtained. It can produce misleading conclusions about interventions, make effects appear greater than they are, lead to irreproducible research, and ultimately undermine the credibility of science in general" (Brown, Mehta, & Allison, 2017, p.1). Since more published studies are included in the scope of meta-analysis research, possible biases in these studies are expected to be reflected in the meta-analysis (Bakioğlu & Göktaş, 2018). Therefore, it should be determined whether the studies cause publication bias. Funnel scatter plot, Rosenthal's Safe N, Begg and Mazumdar Rank Correlations methods, and Egger's Regression test were used in the study to determine publication bias.

The scattering of the individual effect sizes of the studies included in the meta-analysis is presented in Graphic 2. The fact that the effect sizes obtained from the studies are gathered in an inverted funnel (wide part facing down), symmetrically and around the combined effect size is interpreted as that there is no publication bias (Dinçer, 2014; Şen & Yıldırım, 2020; Terrin, Schmid, & Lau, 2005).




**Graphic 2.** Distribution of individual effect sizes of studies

When Graphic 2 is examined, it is seen that some of the effect sizes obtained from studies are located outside the funnel scatter plot and in a non-symmetrical manner. Publication bias statistics were also examined to make a more accurate assessment. Statistics of publication bias of the studies are presented in Table 1.

**Table 1.** Statistics of publication bias of the studies

| Rosenthal's Fail-Safe N | | | | Begg and Mazumdar Rank Correlations | | | | Egger's Regression Test | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ***k*** | ***Z*** | ***p*** | ***FSN*** | ***Tau*** | ***z*** | ***p**** | ***p**** | ***Inter.*** | ***t*** | ***p**** | ***p**** |
| 23 | -4.154 | .000 | 81 | .123 | .819 | .206 | .413 | 2.473 | 1.485 | .076 | .152 |

***p**** = one-tailed ***p***** = two-tailed

Rosenthal's Fail-Safe N analysis gives the number of incomplete studies (unpublished/unavailable studies) required to bring the calculated effect size to a meaningless level (to bring the p-value below .050). Depending on the type of analysis, the formula $N_R > 5k + 10$ is used to evaluate whether there is publication bias. This formula states that the number of incomplete studies (*NR*) required to bring the calculated effect size to a meaningless level should be at least five times more than the number of studies (k) included in the meta-analysis (Hofmann, Fang, & Brager, 2015; Şen &Yıldırım, 2020). When the *FSN* value in Table 1 is examined, it indicates that the studies have publication bias. "However, the most precise way to understand this clearly is the Tau coefficient. In this statistic, the Tau coefficient is expected to be close to 1.00. In this case, it is expected that the two-tailed *p*-value of the Tau coefficient will not make a significant difference ($p > .05$) "(Dinçer, 2014, p.78-79). In the Egger Regression test, "it is recommended to look at the one-tailed *p*-value. If the *p*-value (one-tailed *p*-value) obtained as a result of this test is greater than .05, it can be said that publication bias is not publication bias" (Şen & Yıldırım, 2020, p.102). It is seen in Table 1 that the two-tailed *p*-value of the Tau coefficient calculated and the one-tailed *p*-value obtained as a result of the Egger Regression test are greater than .05. According to these statistical results, it can be said that the studies do not have publication bias. As a result, it was decided that it would be appropriate to conduct a meta-analysis of 23 studies. Accordingly, the sample of the study consists of 43.656 students, 21.398 girls, and 22.258 boys.

**Determination of the Analysis Model**

The homogeneity of the effect sizes can be tested to determine which of the model values obtained as a result of the meta-analysis will be used in interpretation. Based on the results of this test, for the effect sizes showing homogeneous distribution, the fixed-effects model should be used; for those with heterogeneous distribution, the random-effects model should be used in the interpretation of the analysis results (Ellis, 2010, as cited in Gözüyeşil & Dikici, 2014). However, the choice of model should be decided as "a priori", that is,

before the analyzes (Başol, 2016). Based on the assumption that the studies in the research were based on social sciences, carried out in different educational levels, and different scales were used in the studies, it was thought that the random-effects model would be more suitable for meta-analysis. However, the homogeneity test was also applied to determine the distribution of effect sizes. Analysis models were determined depending on the significance of the *Q* statistic value obtained as a result of the homogeneity test and the $I^2$ value.

**Interpretation of Analysis Results**

The classification of Cohen, Manion, and Morrison (2007, p.521) was used in the interpretation of the effect sizes (Hedges' *g*) calculated based on the difference in group averages. According to Cohen et al. (2007, p. 521), the effect size classification is as follows: 0 ≤ effect size values ≤ .20, .21 ≤ effect size values ≤ .50, .51 ≤ effect size values ≤ 1.00, and 1.00 < effect size values are interpreted as weak, modest, moderate, strong, respectively.

## Results

In the study, the question of "What are the frequency and percentage distributions regarding the moderator variables of the studies included in the meta-analysis?" was determined as the first sub-problem. In line with this sub-problem, the calculated frequency and percentage values for the moderator variables of the studies within the scope of the meta-analysis are presented in Table 2.

**Table 2.** Frequency and percentage values calculated for the moderator variables of the studies

| Moderator Variable | | *f* | % |
|---|---|---|---|
| **Year** | 2016 | 4 | 17.39 |
| | 2017 | 2 | 8.70 |
| | 2018 | 4 | 17.39 |
| | 2019 | 5 | 21.74 |
| | 2020 | 6 | 26.09 |
| | 2021 | 2 | 8.7 |
| **Continent*** | Africa | 3 | 13.04 |
| | Asia | 8 | 34.78 |
| | Europe | 12 | 52.17 |
| **Education Level** | Lower Secondary ** | 9 | 39.13 |
| | Upper Secondary *** | 12 | 52.17 |
| | Lower + Upper Secondary | 2 | 8.70 |
| **Scale Type** | ABQ (Bresó, Salanova, and Schaufeli, 1997) | 1 | 4.35 |
| | ESSBS (Aypay, 2011) | 2 | 8.70 |
| | MBI-SS (Schaufeli et al., 2002) | 7 | 30.43 |
| | SSBS (Aypay, 2012) | 2 | 8.70 |
| | SBI (Salmela-Aro et al., 2009) | 11 | 47.83 |

* According to the majority of the country's territory

** Lower Secondary: Primary Education 2nd Phase / Upper Primary School / Secondary Education 1st Phase / Middle School

***Upper Secondary: Secondary Education 2nd Phase / High School / Senior High School

ABQ: Academic Burnout Questionnaire

ESSBS: Elementary School Student Burnout Scale for Grades 6-8

MBI-SS: Maslach Burnout Inventory-Student Survey

SSBS: Secondary School Burnout Scale

SBI: School Burnout Inventory

According to Table 2, regarding the research subject, maximum 26.09% (*f* = 6), 52.17% (*f* = 12), and 52.17% (*f* = 12), were conducted in 2020, Europe, and upper secondary education level, respectively. SBI developed by Salmela Aro et al. (2009) was used by most of the studies (47.83%, *f* = 11).

In the study, the question of "What is the combined effect size that gives the effect of gender on student burnout?" was expressed as the second sub-problem. In line with this sub-problem, the homogeneity test was first performed. The *Q* value calculated based on the homogeneity test is statistically significant [$Q = 272.962$, $p = .000$]. The fact that the *Q* statistic value ($Q = 272.962$) is greater than the critical value of the $\chi 2$ distribution at a 95% significance level [$\chi 2\ (.95) = 33.924$, $df = 22$] and the *p*-value is also statistically significant indicates that individual effect sizes have a heterogeneous distribution. Although the *Q* statistic only reveals the existence of heterogeneity, it does not provide information about the magnitude of heterogeneity (Huedo Medina, Sánchez Meca, Marín Martínez, & Botella, 2006). As an alternative to the *Q* statistic, $I^2$, which shows the true homogeneity ratio of the total change in the observed effect, besides being not sensitive to the number of studies and effect size value, can be used to determine the heterogeneity of the studies (Borenstein et al, 2013). The $I^2$ value calculated based on the homogeneity test is statistically significant ($I^2 = 91.940$, $p = .000$). For $I^2$ statistic, "a value greater than 25% is considered to reflect low heterogeneity, 50% moderate, and 75% high heterogeneity" (Zlowodzki et al., 2007, p.604). The $I^2$ value (91.94%) calculated based on this classification shows that there is a high level of heterogeneity between studies. As a result, it can be stated that both the *Q* statistic and the $I^2$ value have a heterogeneous distribution of effect sizes, therefore the use of the random effects model is more appropriate in interpreting effect sizes. Based on the homogeneity test results, the individual effect sizes, weights, combined effect size of the studies included in the meta-analysis are given in Table 3.

**Table 3.** Individual effect sizes, weights, and combined effect sizes of studies

| Studies | *ES (g)* | Lower Limit | Upper Limit | *Z* | *p* | Weight |
|---|---|---|---|---|---|---|
| Bibi, Wang, Ghaffari, Khalid, & Iqbal (2019) | -.323 | -.461 | -.185 | -4.575 | .000 | 4.697 |
| Bikar, Marziyeh. & Pourghaz (2018) | -.332 | -.539 | -.125 | -3.146 | .002 | 4.322 |
| Cadime, Pinto, Lima, Rego, Pereira, & Ribeiro (2016) | -.071 | -.249 | .106 | -.787 | .431 | 4.492 |
| Chahid, Ahami, Chigr, & Najim (2018) | .528 | .329 | .728 | 5.188 | .000 | 4.366 |
| De Stasio, Ragni, Bucchi, Altea, & Bacile (2019) | .382 | -.080 | .844 | 1.621 | .105 | 2.745 |
| Fiorilli, De Stasio, Di Chiacchio, Pepe, & Salmela-Aro (2017) | .010 | -.260 | .280 | .075 | .940 | 3.926 |
| Güngör (2019) | -.261 | -.466 | -.056 | -2.500 | .012 | 4.335 |
| Herrmann, Koeppen, & Kessels (2019) | .668 | .485 | .850 | 7.166 | .000 | 4.465 |
| Korhonen, Tapola, Linnanmäki, Aunio (2016) | .032 | -.083 | .148 | .550 | .582 | 4.799 |
| Martos Martínez et al. (2021) | -.168 | -.278 | -.058 | -3.005 | .003 | 4.823 |
| Oyoo, Mwaura, & Kinai (2018) | -.234 | -.384 | -.083 | -3.038 | .002 | 4.636 |
| Paidar, Amirhooshangi, & Taghavi (2017) | -.614 | -.884 | -.344 | -4.462 | .000 | 3.926 |
| Sert Ağır (2018) | .308 | .110 | .506 | 3.046 | .002 | 4.376 |
| Tomaszek & Muchacka-Cymerman (2019) | .122 | -.181 | .425 | .789 | .430 | 3.709 |
| Tomaszek & Muchacka-Cymerman (2020) | -.680 | -.982 | -.379 | -4.424 | .000 | 3.720 |
| Usán Supervía & Bordás (2020) | -.276 | -.352 | -.199 | -7.065 | .000 | 4.937 |
| Usán Supervía, Salavera Bordás, & Murillo Lorente (2020) | -.307 | -.381 | -.234 | -8.168 | .000 | 4.945 |
| Vu & Bosmans (2021) | -.116 | -.270 | .039 | -1.467 | .142 | 4.616 |
| Walburg, Mialhes, & Moncla (2016) | .031 | -.235 | .296 | .226 | .822 | 3.955 |
| Wang, Hu, Ouyang, Chen, Qi, & Jiang (2020) | .104 | .012 | .196 | 2.211 | .027 | 4,888 |
| Widlund, Tuominen, Tapola, & Korhonen (2020) | .166 | -.016 | .349 | 1.788 | .074 | 4.466 |
| Winga, Agak, & Ayere (2016) | .219 | .017 | .421 | 2.125 | .034 | 4.352 |
| Yıldız & Kılınç (2020) | -.185 | -.361 | -.010 | -2.071 | .038 | 4.506 |
| Random Effects | -.048 | -.162 | .065 | -.837 | .403 | |

According to Table 3, it is seen that the effect sizes standardized in terms of gender variable vary between -.680 and .668 values. A statistically significant difference ($p < .05$) was found in 15 studies; in 8 studies, no significant difference was found. The confidence interval of the studies ranges between -.982 and .850.

Considering that the negative effect size for male students and positive effect size for female students were assigned while creating the data set before the meta-analysis, it is seen that 10 of the studies had a difference in favor of male students with a negative effect size.

When statistical significance was calculated according to the Z test, it was found as $Z$ = -.837. It was determined that the result reached did not have statistical significance with $p$ = .403. However, "the absence of statistical significance should never be interpreted as evidence of no effect" (Borenstein et al., 2013, p.265). Therefore, considering the effect size classification by Cohen et al. (2007), it can be said that gender affects students' perceptions of burnout, although it has a weak effect size. Accordingly, according to the random-effects model, it is seen that the perception of burnout is in favor of male students ($g$ = -.048). In other words, male students have higher burnout than female students.

In the study, the question of "is there a significant difference between the effect sizes of the studies examining the burnout levels of the students in terms of gender variable according to the moderator variables (the year, the continent, the education level, and the scale type)?" was expressed as the third sub-problem. In line with this sub-problem, firstly, the studies were divided into groups according to the moderator variables. Then, considering that each group should have at least two studies to calculate the effect size, groups with less than two studies were removed from the data set and analyzes were made. The distribution of effect sizes and homogeneity test results of their studies according to moderator variables are presented in Table 4.

**Table 4.** Distribution of the effect sizes of the studies according to the moderator variables and homogeneity test results

| **Moderator** | **95% Confidence Interval** | | | | **Homogeneity Test** | | | |
|---|---|---|---|---|---|---|---|---|
| | ***k*** | ***E.S. (g)*** | **Lower Limit** | **Upper Limit** | ***QB*** | ***df*** | ***p*** | $\chi 2$ |
| **Year** | | | | | 10.205 | 5 | .070 | 11.070 |
| 2016 | 4 | .045 | -.064 | .155 | | | | |
| 2017 | 2 | -.302 | -.914 | .310 | | | | |
| 2018 | 4 | .066 | -.334 | .466 | | | | |
| 2019 | 5 | .108 | -.335 | .551 | | | | |
| 2020 | 6 | -.178 | -.365 | .008 | | | | |
| 2021 | 2 | -.151 | -.240 | -.061 | | | | |
| **Continent** | | | | | 2.541 | 2 | .281 | 5.991 |
| Africa | 3 | .168 | -.292 | .627 | | | | |
| Asia | 8 | -.168 | -.348 | .012 | | | | |
| Europe | 12 | -.020 | -.179 | .140 | | | | |
| **Education Level** | | | | | 2.885 | 1 | .089 | 3.841 |
| Lower Secondary Education | 9 | .091 | -.069 | .252 | | | | |
| Upper Secondary Education | 12 | -.112 | -.284 | .059 | | | | |
| **Scale Type** | | | | | 14.525 | 3 | .002 | 7.815 |
| ESSBS | 2 | -.087 | -.461 | .288 | | | | |
| MBI-SS | 7 | -.231 | -.295 | -.167 | | | | |
| SBI | 11 | .121 | -.050 | .292 | | | | |
| SSBI | 2 | -.180 | -1.148 | .789 | | | | |

To determine whether there is a significant difference between the effect sizes calculated according to the year in which the study was conducted, the studies were divided into six different groups as 2016, 2017, 2018, 2019, 2020, and 2021. According to Table 4, in terms of absolute value, the highest effect size value ($g$ = -.302) is seen to belong to 2017; the lowest effect size value ($g$ = .045) is seen to belong to 2016. The interclass homogeneity test value [$Q_B$ = 10.205, $p$ = .070] is not significant since it is lower than the critical value of the $\chi 2$ distribution [$\chi 2$ (.95) = 11.070, $df$ = 5] at the 95% significance level. Therefore, it can be said that there is no

significant difference between the effect sizes of the studies examining student burnout in terms of gender variable according to the study year. In other words, it can be stated that the year is not a moderator variable in the relationship between gender and student burnout.

To whether there is a significant difference between the effect sizes calculated according to the continent where the study was conducted, the studies were divided into three different groups as Africa, Asia, and Europe. According to Table 4, in terms of absolute values, it is seen that the effect sizes calculated for the Asian ($g$ =.168) and African ($g$ = -.168) continents are larger than that of the European continent ($g$ = -.020). The homogeneity test value between classes [$QB$ = 2.541, $p$ = .281] is not significant since it is lower than the critical value of the $\chi 2$ distribution [$\chi 2$ (.95) = 5.991, $df$ = 2] at the 95% significance level. Therefore, it can be said that there is no significant difference between the effect sizes of the studies examining student burnout in terms of gender variable according to the continent where the study was conducted. In other words, it can be stated that the continent is not a moderator variable in the relationship between gender and student burnout.

To determine whether there is a significant difference between the effect sizes calculated according to the education level where the study was conducted, the studies were divided into two different groups as lower secondary education and upper secondary education. To determine the moderating effect of education level, studies that included lower secondary education + upper secondary education were not included in the analysis. According to Table 4, it is seen that the effect size calculated for upper secondary education ($g$ = -.112) is larger than that of lower secondary school ($g$ = .091) in terms of absolute values. The homogeneity test value between classes [$Q_B$ = 2.885 $p$ = .089] is not significant since it is lower than the critical value of the $\chi 2$ distribution [$\chi 2$ (.95) = 3.841, $df$ = 1] at the 95% significance level. Therefore, it can be said that there is no significant difference between the effect sizes of the studies examining student burnout in terms of the gender variable according to the education level of the study. In other words, it can be stated that the education level is not a moderator variable in the relationship between gender and student burnout.

To determine whether there is a significant difference between effect sizes calculated according to the scale type used in the study, the studies were divided into four different groups as ESSBS, MBI-SS, SBI, and SSBS. According to Table 4, in terms of absolute values, the highest effect size value ($g$ = -.231) is seen to belong to MBI-SS developed by Schaufeli et al. (2002); the lowest effect size value ($g$ = -.087) is seen to belong to ESSBS developed by Aypay (2011). The homogeneity test value between classes [$QB$ = 14.525, $p$ = .002] is significant since it is greater than the critical value of the $\chi 2$ distribution at the 95% significance level [$\chi 2$ (.95) = 7.815, $df$ = 3]. Therefore, it can be said that there is a significant difference between the effect sizes of the studies examining student burnout in terms of gender variable, according to the scale used in the study. In other words, it can be stated that the scale type is a moderator variable in the relationship between gender and student burnout.

## Conclusion and Discussion

In this study, which aims to examine the effect of gender on students' burnout with meta-analysis method, individual effect sizes of 23 studies which were conducted in 2016-2021, on students studying at lower and upper secondary education levels, and had statistical information for calculating effect sizes were calculated. Before combining individual effect sizes, statistics related to publication bias, normal distribution, and weight distribution were examined and the effect sizes were combined in the random effects model in line with the homogeneity test results. Besides, it was examined whether there was a significant difference between the effect sizes of studies examining student burnout in terms of gender variable, according to moderator variables.

The first finding of the study is about the frequency and percentage distributions of the studies included in the meta-analysis. It was determined that regarding the research subject, maximum 26.09% ($f$ = 6), 52.17% ($f$

= 12), and 52.17% (*f* = 12), were conducted in 2020, Europe, and upper secondary education level, respectively. SBI developed by Salmela Aro et al. (2009) was used by most of the studies (47.83%, *f* = 11).

The second finding of the study is related to the combined effect size, which gives the effect of gender on student burnout. When the statistics on the combined effect size were examined, it was seen that gender did not cause a significant difference in student burnout. This finding is consistent with Frajerman et al. (2019) are similar to the results of the meta-analysis. Frajerman et al. (2019) to estimate the prevalence of burnout in medical students, it was determined that there was no significant difference in burnout according to gender. However, since the absence of statistical significance should never be interpreted as no effect (Borenstein et al., 2013), it can be said that gender causes a difference in student burnout, and the difference is weak level and in favor of male students. The fact that the difference is in favor of male students indicates that male students have higher burnout than female students. On the other hand, as a result of the meta-analysis study conducted by Purvanova and Muros (2010) to reveal the gender difference in employee burnout; women are more likely to experience emotional burnout than men; men were found to be more likely to become desensitized than women.

The difference in the type or level of burnout according to gender may be due to the developmental characteristics of the participants in the sample of the studies and the differences in their conditions. According to Jensen and Nutt (2017), there are various anatomical and physiological differences between the brains of adolescent girls and the brains of adolescent boys. These differences are as follows: The amygdala, which plays an important role in the formation of emotions, develops earlier in girls than in boys. The link between language and decision-making domains is more developed in girls than boys. In addition, because girls have larger corpus callosum and better communication between the two hemispheres of the brain, their ability to switch between different tasks may be more developed than boys (Jensen and Nutt, 2017). In this direction, it can be said that adolescent female students are more advantageous than male students in terms of cognitive, affective, and behavioral aspects in terms of their developmental characteristics. In the 2015 TIMSS evaluation, it is stated that female students have less absenteeism than male students, spend more time doing homework, and have more self-confidence in science (Batrya, 2017). The OECD (2020) report assessing the gender gap in 2018 PISA performance states that on average, girls outperform boys in reading by about 30 points. Again, in the report, it is pointed out that boys who fall behind and lack basic proficiency in reading may face serious difficulties in their further education, in the labour market market and in daily life. The fact that female students are more advanced than male students in terms of developmental characteristics, and that they have some advantages compared them, may have caused them to experience less inadequacy and burnout in fulfilling their duties and responsibilities at school.

The third finding of the study is about whether there is a significant difference between the effect sizes of the studies that examine the burnout of the students in terms of the gender variable according to the moderator variables. As a result of the analyzes made, it was seen that there was a significant difference between the effect sizes calculated according to the scale type used in the study. It may be useful to reveal what the underlying reasons for the statistical difference or the indifference can be in terms of interpreting the research results. For this, studies should examine in the context of moderator variables.

When the effect sizes of the studies are examined according to the year in which the study was conducted, it is seen that the largest effect size was calculated in favor of male students for 2017. Although it is not statistically significant, it is seen that the effect sizes vary by year. Studies conducted in 2017 (Fiorilli et al., 2017; Paidar et al., 2017) were conducted in different continents, but each study also used the SBI scale and was conducted on high school samples. The level of education in which the studies were conducted may be a factor in the high effect size. On the other hand, examining the developments in the education system of the countries in the 2016-2017 academic year can clarify the results of the research. However, it seems difficult to

compare the effect sizes according to the study years, as studies do not specify when the data were collected. Another remarkable point in the research findings is the change in students' burnout levels in the last two years. After the first case of COVID-19 was seen in December 2019, the psychological effect of the epidemic along with the virus spread rapidly around the world, and distance education was started in countries where the case became widespread. The meta-analysis of studies on student burnout in 2020 shows that gender has a greater effect on student burnout compared to the previous year. The fact that students experienced distance education for the first time may have caused more burnout, especially for male students. On the other hand, this effect is less in 2021. This may be the result of male students getting used to distance education. Anxiety and burnout are interrelated (Koçak & Seçer, 2018; Koutsimani, Montgomery, & Georganta, 2019). However, Vu and Bosmanas (2021), in their study to determine whether COVID-19 anxiety is related to students' learning burnout, could not find a relationship between anxiety and burnout. According to the researchers, there is no relationship between anxiety and burnout because students' main concerns about COVID-19 are related to contracting the virus, which makes learning less important to them, and they are exposed to less stress in quarantine than they would in school.

When the effect sizes of the studies are examined according to the continent where the study was conducted, it is seen that the effect sizes calculated for the Asian and African continents are larger than those of the European continent, although it is not statistically significant. Frajerman et al. (2019) found that burnout has a higher prevalence in Oceania and the Middle East than in other continents. It seems difficult to compare the results of the research due to the different coding of the countries where the studies were conducted. On the other hand, there are some remarkable points in the research findings. While overall in other continents male students have higher burnout, in Africa female students have higher burnout. In the Gender and Education Report prepared by UNICEF (2020), it is stated that approximately 59 million children of primary school age did not attend school in 2018, 55% of them were female students, and this rate reached the highest level in Sub-Saharan African countries. Again, according to this report, it is stated that Sub-Saharan Africa cannot keep up with the worldwide progress in reducing the number of children out of school. In this context, the fact that female students in Africa countries are more disadvantaged in access to education than male students may have been a factor in their higher burnout than male students.

When the effect sizes of the studies are examined according to the education level in which the study was conducted, it is seen that the effect size calculated for upper secondary education is larger than that of secondary education and in favor of male students, although it is not statistically significant. The increase in student burnout may be related to grade or time. Longitudinal studies on secondary school students by Bask and Salmela-Aro, 2013, Salmela-Aro, Kiuru and Nurmi (2008), and Salmela-Aro and Tynkkynen (2012) reveal that as time passes, the burnout level of students studying in academic fields also increases. In general, all students can benefit from basic education, while only a more limited number of students can benefit from higher education. An individual can benefit from higher education by carrying some special conditions. These conditions may differ depending on the country. For example, a student's transition to higher secondary and secondary education in Turkey is carried out based on his / her performance that showed the central examination. This creates a competitive environment for students. “Competition, ambition, and bad temper are the internal sources of stress. Oftentimes, internal stress sources are more effective than external stress sources” (Çiçek, 2006). Considering the relationship between stress and burnout (Çam, et al., 2014; Mousavi et al., 2017), a higher burnout level of secondary school students may be considered natural. As a result of the research, the calculation of effect size in favor of female students in lower secondary school and favor of male students in upper secondary school is remarkable. This finding of the study is consistent with the research results of Salmela-Aro and Tynkkynen (2012). Salmela-Aro and Tynkkynen (2012) revealed that although female students studying in the academic track have the highest burnout level, the highest increase in burnout level is observed in male students studying in the academic track. This may be related to the fact that girls

enter puberty earlier than boys. "Adolescents show a rapid physical change in the period they are in and they are faced with the necessity of adapting to this situation" (Cenkseven, 2002, p.33). In lower secondary school, female students' trying to respond to the demands of the school while trying to adapt to the changes brought about by adolescence may have caused them to experience higher levels of burnout than male students. On the other hand, the fact that male students in upper secondary school struggle with the psychological pressure created by the entrance exam to higher education as well as puberty may have caused them to experience higher burnout than female students.

When the effect sizes of the studies are examined according to the scale used in the studies, it is seen that the largest effect size is calculated in favor of male students for the MBI-SS developed by Schaufeli et al. (2002). It is seen that the second-largest effect size of the study is calculated in favor of male students for the SSBS developed by Aypay (2012). Examining on which sample group the scales were applied or for which sample group they were developed can clarify the results of the research. The sample of only one of the seven studies that used MBI-SS as a data collection tool consisted of students studying only in lower secondary education. The SSBS developed by Aypay (2012) puts the burnout level of (upper) secondary school students. Considering that male student studying in upper secondary education have higher burnout, it can be said that the findings obtained from the variables of education level and scale type of the research are similar to each other.

It can be said that this research has some limitations. The lack of reporting of some statistics on gender limited the number of studies to be included in the meta-analysis. The effect size for the Academic Burnout Scale developed by Bresó et al. (1997) could not be calculated because it was used in only one study. In some studies, the collection of data in the past time period or the lack of information on exactly when it was collected caused the results of the research not to be compared in the context of educational developments in the process. The lack of meta-analysis studies examining the effect of gender on school burnout in the context of moderating variables limited the comparison of research results. Despite these limitations, the research provides important information about the effect of gender on student burnout. The research revealed that gender has a weak effect on student burnout and in favor of male students, and the scale type used in the study has a moderating effect on the relationship between gender and student burnout. Considering that the sex ratio at birth is 1.05 (boys/girls) worldwide (Ritchie & Roser, 2019) and student burnout (drop out, alienation from school, academic procrastination, etc.) has negative outcomes, the results of the research become more important. It may be possible to conduct a meta-analysis on the dimensions of student burnout by changing the selection criteria in the method part of the study and including new research findings to be made in the future.

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International Online Journal of Educational Sciences

ISSN: 1309-2707

# The Effect of a Multicultural Education Course on Teachers' Attitudes towards Multicultural Education and Prejudices

*Research Article*

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**To cite this article:** Akcaoglu, M. O. (2021). The effect of a multicultural education course on teachers' attitudes towards multicultural education and prejudices**,** *International Online Journal of Educational Sciences, 13*(5), 1486-1502.

ARTICLE INFO

*Article History*:

Received: 26.04.2021

Available online: 08.07.2021

ABSTRACT

The present study aimed to find out whether a course on multicultural education affect teachers' attitudes towards multicultural education, cultural differences, prejudices and democracy education. To this end, a one-group pretest-posttest quasi-experimental design was employed. The sample of the study consisted of 20 teachers enrolled in a graduate program at a mid-sized public university in the Western Black Sea Region of Turkey. The Democracy and Multicultural Education Attitude Scale (DMEAS) was administered both at the beginning and at the end of the 14-week multicultural education course. Wilcoxon signed-rank and Kruskal-Wallis tests were used to compare the pre-test and post-test scores, to analyze the differences based on gender, place of residence and years of experience. The findings of the Wilcoxon signed-rank test revealed a statistically significant difference between the pre-test and post-test scores regarding attitudes towards multicultural education, cultural differences, prejudices and democracy education. In addition, Kruskal-Wallis results indicated a significant difference for the gender and place of residence variables for the post-test. However, the results of Kruskal-Wallis showed that there was not significant difference in terms of years of experience. Based on the findings, it can be said that a multicultural education course added to the curricula could significantly improve the multicultural attitudes of the teachers and reduce their prejudices.



**Keywords:**
Multicultural education course, attitude, prejudice, teachers, cultural differences

## Introduction

Teachers with cultural competencies play a key role in transforming existing diversities in their classrooms into opportunities and eliminating educational inequalities. As agents of change, teachers are

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expected to act as guides in helping their students be open-minded to and accept the diversities that exist in the classroom environment (Van Driel, Darmody, & Kerzil, 2016). The results of the research explicate that teachers, who belong to the dominant culture, start to experience difficulties in the teaching process with the increase of students who are different from them in terms of culture and language (Acquah, Tandon, & Lempinen, 2016; Causey, Thomas, & Armento, 2000; Herzog-Punzenberger et al., 2020). According to Siwatu and Starker (2010), teachers who cannot fully comprehend the connection between cultural differences and the sources of in-class student and teacher behaviors are inclined to prefer traditional teaching techniques when they are instruct students with diverse features. Thus, most teachers cannot establish meaningful relationships with students who are different from them cannot respond to the needs of the students due to cultural differences. The demographic change in the classrooms has revealed a need for today's teachers to have the attitudes and efficacies required to work effectively in the education and training process with the students who have diversities (Banks, 2016). To this end, it is essential for teachers to have a more critical perspective and be knowledgeable about diversities in order to face the challenges that may arise as a result of the increase in the number of students with cultural differences at all levels of education.

Lessons and activities related to multicultural education have become one of the fundamental requirements for both in-service teachers and teacher candidates (Young, 2020). Therefore, competencies regarding cultural differences and multicultural education should be integrated into both in-service teachers' professional development processes and teacher training programs. Because integrating cultural diversity goals, objectives, content and activities into the curriculum will increase awareness and sensitivity for individual differences (Shaya & Gbarayor, 2006).

Since all teachers are responsible for education and training in diverse societies, the need for educators to be equipped with multicultural attitudes and efficacies through in-service training and are ready to work with students from different cultural backgrounds comes to the fore (Banks, 2016; Howlett, Bowles, & Lincoln, 2017; Seel, 2011).

**Multicultural Education**

Multicultural education encompasses the improvement of individuals through the use of critical thinking in solving social problems and enhancing students' academic achievements in order to make society more democratic. Multicultural education also focuses on the equal representation of students with such diversities, which contributes to democratic society (Halvorsen & Wilson, 2010; Özen, 2015). In addition, the idea of multicultural education requires the support of the values of diversity and equal opportunity for students through understanding the contributions and perspectives of different races, ethnicities, cultures, languages, religions, gender, sexual orientation, physical abilities and disabilities in educational institutions (Gay, 2004; Gollnick & Chinn, 2016).

According to Banks (2019), multicultural education is an idea that includes students' ability to experience equality in education in schools regardless of their differences such as gender, ethnicity, race, language, social class, religion, giftedness or disability. Multicultural education, also defined as a reform movement, advocates that schools should be redesigned in order for students with cultural differences to have an equal chance to achieve school success. The National Association of Multicultural Education (NAME) (2009) describes the term as "a philosophical concept built on the ideals of freedom, justice, equality, equity, and human dignity It recognizes the role schools can play in developing the attitudes and values necessary for a democratic society."

Multicultural education contributes to eliminating discriminatory attitudes of students and developing positive attitudes towards individuals from different cultural groups, and being more tolerant. In this way, it provides students with the opportunities to get to know their own and other cultures, help them gain

experience, increase interaction and create collaborative learning environments. Through multicultural education, it may also be possible to reduce the lack of information, rule out negative features such as fear, anxiety, and prejudice related to the differences that may occur in education and training environments (Acar-Çiftçi & Aydın, 2014; Köşker & Erdoğan, 2020).

**Dimensions and Approaches of Multicultural Education**

In line with the purpose of this study, to determine the effects of a multicultural education course on teachers' attitudes and prejudices, the framework introduced by Banks (1989) was taken as a basis. Banks (1995a) proposed five dimensions for multicultural education: content integration, the knowledge construction process, prejudice reduction, equity pedagogy, and empowering school culture and social structure. Content integration means teachers' use of examples and content from different cultures to illustrate critical concepts, generalizations and issues in their lessons. The knowledge construction is related to the contribution that teachers make for their students to understand, question and determine how the biased content and perspectives in the course affect the formation of knowledge in the learning process (Banks, 1996). Prejudice reduction includes lessons and activities used by teachers to help students develop positive attitudes towards different individuals and groups with diverse features. The results of the research revealed that if certain conditions exist in the teaching environment, students can develop more positive intergroup attitudes when exposed to lessons, units and teaching materials containing content related to different racial and ethnic groups (Banks, 1995b). Finally, empowering school culture and social structure occurs when the culture and organization of the school becomes an environment in which diverse students can experience equality and reach equal opportunities.

Within the dimensions listed by Banks (2019), four distinct approaches are suggested to integrate a multicultural understanding into education programs. Banks (1989) described the first approach, the Contribution Approach, as a commonly used approach and the easiest approach teachers can use to integrate the curriculum with multicultural content. The feature of the approach is that heroes from different cultures are selected and included in the curriculum. Apart from this inclusion, there is no change in the basic features of the curriculum. Therefore, the approach does not help students understand the differences as a whole. The second approach, the additive approach, entails the addition of concepts, themes, and perspectives of content related to differences without changing the curriculum's basic structure, objectives, and features (Banks, 1989). This approach is accomplished by adding a book, unit or lesson. The most crucial drawback of this approach is that it does not involve restructuring the curriculum, so the additions are often reflected from the perspectives of historians, writers, artists and scientists belonging to the dominant culture (Banks, 1989). Unlike the other two approaches, the transformation approach changes the basic structure of the curriculum, allowing students to view concepts, topics, themes, and issues from the perspectives of different cultures (Banks, 2019). The decision^-making and social action approach, on the other hand, adds elements to the curriculum that require students to make decisions and act on the concept, problem or problem of cultural differences emphasized in the content (Banks, 1989). Furthermore, Banks (2019) asserts that in this approach, students collect data on the subject, analyze values and beliefs, synthesize their knowledge and values, and decide what actions to take to reduce prejudice and discrimination in their school, if any.

One of the most widely used dimensions is content integration. Content integration often causes issues related to diversities to be conveyed superficially and mainly from a theoretical aspect. However, cultural differences should be acquired through experiences and not conveyed in a random way (Deakins, 2009). Studies have revealed that stand-alone courses on multicultural education, designed to provide students with required experiences in diverse classroom environments, have positive effects on students' level of multicultural attitudes, efficacies, beliefs and knowledge (Ndemanu, 2012; Richardson, Volberding, & Zahl,

2020; Zygmunt-Fillwalk & Leitze, 2006). Accordingly, this study aimed to reduce prejudices, the second dimension, through a stand-alone multicultural education course.

**Courses on Multicultural Education**

Sleeter and Carmona (2017) consider courses that include theory and practice for multicultural education as progressive approaches because these courses criticize discriminatory attitudes, behaviors and practices in educational settings on the one hand and aim to change the education process altogether, as a reform movement. Therefore, it is quite important that courses or in-service training seminars on multicultural education, whose aim is to increase awareness of diversities and helping teachers to teach effectively in a culturally diverse society, are presented in various ways both during the teacher training process and after starting the teaching profession. Because when teachers gain experience in multicultural education through courses, they also have the opportunity to learn how students with cultural diversities in their classes are marginalized by society. In addition, they become alert and responsive to the impact of existing prejudice, discrimination and privilege. Therefore, the courses on cultural differences should also highlight how privileges and marginalization can change and affect individuals' perspectives (Richardson et al., 2020).

The time spent by learners to learn new content is related to the successful outcome of the learning and teachers have positive attitudes when they remain in multicultural environments (Grant & Secada, 1990; Pavone, 2011). The results of several studies revealed that a multicultural education course offered independently from other lessons was effective in developing positive attitudes of teachers and teacher candidates regarding cultural diversities in the classroom and increased their efficacy levels (Cho & DeCastro-Ambrosetti, 2005; Garriott, Reiter, & Brownfield, 2016; Smith, Constantine, Dunn, Dinehart, & Montoya, 2006). According to Chang (2002) and Hurtado, 1996, students who completed elective or compulsory courses on multicultural education and diversities have more positive judgments on racism and minorities. Similarly, in other studies, it was revealed that courses on cultural differences reduce prejudiced attitudes (Hogan & Mallott, 2005), the individuals exposed to such courses want to attend different courses on similar subjects (Laird, Engberg, & Hurtado, 2005), and have a more respectful attitude towards diversities (Ndemanu, 2012).

**Present Study**

Turkey's population is currently composed of various ethnic groups. The diversities within the country have increased rapidly, especially due to the civil war that started in Syria in 2011 and the efforts to achieve the internationalization goals set by the Council of Higher Education over the last decade (Kasap, 2020). As a result, the changes that need to be made in the education system regarding differences have become a more critical issue. This change has also revealed the need to increase teachers' awareness in terms of the diversities that exist in their classroom settings (Aydın, 2013). However, we can say that both the teacher training programs implemented in Turkey and postgraduate opportunities or in-service training seminars for teachers are not enough to meet the needs of diverse student groups in the schools. When there are no courses on multicultural education, after graduation, teachers are required to address such issues as by managing diversity or teaching and adapting their curriculum to the needs of students with cultural differences through experiences. Thus, teachers should be taught how to integrate diversity-related issues into the relevant classroom content, achieve equal academic success for all their students, regardless of their differences, and raise their students' awareness of pluralism (Aydın, 2013).

In Turkey, several studies have recently been carried out regarding various aspects of multicultural education, e.g., attitude, efficacy, belief. When the studies conducted are examined, it is seen that the studies are mostly related to determining the level of multicultural attitudes and efficacies (Akman, 2020; Akyıldız, 2018; Arsal, Arsal, & Akcaoğlu, 2017; Ayten-Kasa & Köse; Karadağ & Özden-Özdemir, 2020). In addition, the studies mostly focused on revealing the relations with regard to such variables as gender Bakır, 2020; Çoban,

Karaman, & Doğan, 2010), place of residence (Arslan & Çalmaşur, 2017; Bulut & Başbay, 2014; Karacabey, Ozdere, & Bozkus, 2019; Karatas, 2015; Özdemir & Dil, 2013; Polat, 2012; Saracaloğlu, Evin, & Varol, 2004) and years of experience (Duran & Çalışkan, 2020; Rengi & Polat, 2014).

When the studies carried out in Turkey on multicultural education were examined, it was revealed that the number of experimental studies accounted for only 3.3% (Köşker & Erdoğan, 2020). Moreover, much attention has been given to the investigation of pre-service teachers' multicultural attitudes, beliefs and perceptions (Bulut & Başbay, 2014; Özbilen, Canbulat, & Hamurcu, 2020) and the studies probing the thoughts of in-service teachers are not sufficient. However, focusing research only on prospective teachers cannot provide reliable information about teachers' real-life experiences in the work environment (Agirdag, Merry, & Van Houtte, 2016). Such qualities as the class size, the administrative structure of the school, the cultural differences of the students in their classes and the goals of the course that the teachers are exposed to in the education process will play a decisive role regarding multicultural education in the classroom environment (Van Houtte, 2011).

Although research findings from several countries report that multicultural education courses and the theory of multicultural education delivered through content integration have positive impacts on the multicultural attitudes and efficacies of teachers and teacher candidates (Agirdag et al., 2016; Arsal, 2019; Chung, 2018; Nadelson et al., 2012), the number of studies published on the effects of a stand-alone multicultural education course on teachers' attitudes towards multicultural education is quite limited (Hicks, Berger, & Generett, 2005; Jennings & Smith, 2002; Ruales, Van Petegem, Tabudlong, & Agirdag, 2021). Moreover, to the best of my knowledge, there are no studies examining the effects of an independent multicultural education course on teachers' multicultural attitudes and prejudices in Turkey. Therefore, the purpose of this study is to contribute to the limited literature by determining the effect of a stand-alone multicultural education course on teachers' attitudes towards multicultural education and cultural differences and their prejudices towards multicultural education. In addition, this study aimed to examine the factors that may be associated with such practices. To this end, this study sought answers to the following research questions.

1. What is the effect of a stand-alone multicultural educational course on teachers' attitudes towards multicultural education?

2. What is the effect of a stand-alone multicultural educational course on teachers' prejudiced attitudes towards multicultural education?

3. What is the effect of a stand-alone multicultural educational course on teachers' attitudes towards cultural differences and democracy education?

4. Are there differences in total scores regarding multicultural education by gender, place of residence and years of experience?

## Method

### Research Design and Participants

In this study, a one-group pre-test–post-test design was used to determine the effect of a stand-alone multicultural education course on teachers' attitudes toward multicultural education and racism. Behavioral researchers most frequently use the one-group pre-test - post-test design to determine the effect of an intervention on a designated participant group (Cranmer, 2017). The researchers also utilize the design "to evaluate the effectiveness of educational programs, the restructuring of social groups and organizations, or the implementation of behavioral interventions"(Cranmer, 2017, p. 1114).

The participants in this study consisted of in-service teachers enrolled at the Education Management Inspection Planning and Economy graduate program at a mid-sized public university in the Western Black Sea Region of Turkey in the 2020-2021 academic year. Twenty-four participants completed the pre-test; however, four students dropped the course after the first two weeks of the semester and the remaining 20 teachers filled in the post-test. In the study, demographic data were gathered to present the context for examining participants' attitudes towards multicultural education concerning their educational background. Demographic characteristics of the participants are given in Table 1.

**Table 1.** Demographic characteristics

| Characteristic | n | % |
|---|---|---|
| Gender | | |
| Women | 9 | 45 |
| Men | 11 | 55 |
| Teaching Specialty | | |
| English Language Teaching | 3 | 15 |
| Turkish Language Teaching | 7 | 35 |
| Psychological Counselling and Guidance | 1 | 5 |
| Classroom Teaching (1st to 4th grades) | 5 | 25 |
| Science Teaching | 1 | 5 |
| Special Education | 2 | 10 |
| Physical Education and Sports | 1 | 5 |
| Experience | | |
| 1-5 years | 4 | 20 |
| 6-10 years | 6 | 30 |
| 11-15 years | 3 | 15 |
| 16-20 years | 4 | 20 |
| 21-25 years | 3 | 15 |
| Place of Residence | | |
| City Centre | 7 | 35 |
| District / Town | 10 | 50 |
| Village | 3 | 15 |

## Course Design

The current study was conducted during a stand-alone graduate course referred to as EBAT-512 Foundations of Multicultural Education (FME). The researcher, also the course instructor, taught FME for 3 hours a week for 14 weeks.

FME has been offered as an elective course to graduate students enrolled at the department of educational sciences, educational administration program. The program aims at supporting administrators and teachers to improve their knowledge and skills in the field.

The researcher has several studies on multicultural education and cultural diversity. This course is designed to provide the students (teachers and school administrators) with the opportunities to start developing their knowledge, skills, competencies and attitudes in the process of becoming a multicultural educator. The course provides the teachers with an introduction and overview of the field of multicultural education. In addition, the FME course guides teachers in meeting the academic, social, cultural and emotional needs of students. The course also aims at providing teachers with opportunities to begin developing the knowledge, skills, efficacy and attitude in the process of becoming multicultural educators and assisting them to think critically and reflectively regarding decisions that need to be made as a classroom teacher to meet the academic, social, cultural, and emotional needs of all students. In the course, information is given about the

features of multicultural education, its purposes, issues such as race, class difference, gender, disability, as well as designing multicultural activities.

Along with other materials, Multicultural Education Issues and Perspectives by (Banks & Banks, 2010) was used the main course book. In addition, pre-chosen articles selected for article critique assignments and presentations and other course materials (videos and web sites) to provide opportunities to envisage multicultural perspectives from different angles are used in the course. Topics and other sources discussed within the 14-week semester are presented in Table 2.

**Table 2.** Course syllabus

| Week | Topic | Article Critique, Videos and Discussion |
|---|---|---|
| 1 | Multicultural Education: Expectations, definition and goals. | Article: Multicultural education and its reflections |
| 2 | The historical and educational foundations of Multicultural Education | Video: Dr. James A. Banks--Founder of Multicultural Education |
| 3 | The Dimensions of Multicultural Education and the School as a Social System | Article: Teachers' Attitudes toward Multicultural Education: Case of Çankırı Province |
| 4 | Influence of social class on education | Video: Momondo: The DNA Journey ׀ Ancestry |
| 5 | Cultural Issues in Education, in Society, and in Persons | Article: Determination of Teachers' Multicultural Competence Perceptions |
| 6 | Multicultural Teaching and Learning | Video: Don't Put People in Boxes |
| 7 | Cultural Issues in Education, in Society, and in Persons | Article: Multicultural Education in Turkey and Teachers' Competencies In Multicultural Education |
| 8 | The influence of ethnic content knowledge on academic achievement? | Video: Tv show: What would you do? (Turkish Version) |
| 9 | Race, Class, Gender, Language, Disability, and Classroom Life. | Article: Refugee Children and Adaptation to School: An Analysis through Cultural Responsivities of the Teachers |
| 10 | Social Class and Educational Equality - Teachers, Curriculum, and Teaching Practices | Video: A Tale of Two Schools |
| 11 | Gender Bias in Today's Classroom: The Curriculum | Article: Instructional Environment and Teacher Competencies in the Context of Multiculturalism |
| 12 | Strategies for Creating Gender-Fair Classrooms. | Finding Solutions to the selected cases from TeacherServer.Com |
| 13 | Language Diversity and Schooling | Article: Multicultural Education and Turkey: Current Situation, Prospects, Possibilities |
| 14 | Special Education in a Diverse Society | Finding Solutions to the selected cases from TeacherServer.Com |

**Instruments**

In this study, the Democracy and Multicultural Education Attitude Scale (DMEAS) was administered both at the beginning and at the end of the study as a pre-test and a post-test to determine the effect of the course. The test scores from each administration were compared to reveal the effect of the multicultural course on the teachers' multicultural attitudes and prejudiced attitudes towards multicultural education and cultural differences.

*The Democracy and Multicultural Education Attitude Scale (DMEAS):* The scale was developed by (Toraman, Acar, & Aydın, 2015) to reveal the attitudes towards multicultural education, prejudices, cultural differences and democracy education. The items in DMEAS were designed from "I completely agree" to "I completely disagree" on a five-point Likert scale. The DMEAS is comprised of 5 sub-dimensions: attitude

towards multicultural education (ATME - 7 items), prejudiced attitude towards multicultural education (PATME - 7 items), attitude towards democracy education (ATDE) (5 items), attitude towards democracy (ATD - 5 items) and attitude towards cultural differences (ATCD - 3 items). The reliability values were calculated as .83 for ATME, .80 for PATME, .79 for ATDE, .78 for ATD, .71 for ATCD and .87 for the scale as a whole. The authors reported that factor loadings of items ranged from .51 to .80 and five-factor structure explained 56.73% of the variance (Toraman, Acar, & Aydın, 2015). Examples of items include: "I contribute to the internalization of cultural differences in my lessons," "I include "Democracy Education" in my lessons," and "The implementation of multicultural education in schools bothers me." The DMEAS has also been determined to be a reliable measure with reliability values ranging from .71 to .83 (Toraman et al., 2015). In this study, the overall Cronbach value was calculated as .77. As for the sub-dimensions, the reliability scores were determined as .89 for ATME, .76 for PATME, .88 for ATDE, .43 for ATD and .96 for ATCD. According to Kline (1979) "There should be at least twice as many subjects as variables in factor-analytic investigations. " (p. 40). Therefore, confirmatory factor analysis could not be conducted in this study.

**Procedures and Data Analysis**

The data was gathered through Google Forms. The researcher informed the participants about the study with a presentation before distributing the link for the online survey. The link for the pre-test remained online for the first two weeks of the semester. The same procedure was followed at the end of the semester, and the URL link was sent to the participants two weeks before the semester ends.

In the preliminary analyses, the assumptions for the parametric tests were checked. SPSS 25 was used to conduct the related analysis. As seen in Table 3, the results of the normality assumption tests for the overall scores revealed that the distribution was not normal for the post-test. Therefore, non-parametric statistics, Wilcoxon signed-rank and Kruskal-Wallis tests were used to compare the mean scores.

**Table 3.** Tests of normality

| | **Kolmogorov-Smirnov[a]** | | | **Shapiro-Wilk** | | |
|---|---|---|---|---|---|---|
| | Statistic | df | Sig. | Statistic | df | Sig. |
| Pre-test scores | .08 | 20 | .200 | .98 | 20 | .950 |
| Post-test scores | .22 | 20 | .015 | .89 | 20 | .024 |

**Ethical Considerations**

Ethical approval from the research ethics board was received for the present study (Document Issue No: 2021-86). The participants were informed about the confidentiality and anonymity of their responses, the aims and risks of the study before filling in the survey. In addition, the participants were required to sign an informed consent statement by choosing “I agree to participate.”

## Results

After the intervention process, a Wilcoxon signed-rank test was conducted to reveal whether there was a significant difference within the groups between pre and post-test scores. The result of the analysis for the overall scores is presented in Table 4.

**Table 4.** Wilcoxon signed-rank test results regarding the overall test scores

| **Dimension** | **n** | **Pre-Test** | | **Post-Test** | | **df** | **z** | **p** |
|---|---|---|---|---|---|---|---|---|
| | | $\bar{X}$ | **SD** | $\bar{X}$ | **SD** | | | |
| Overall Test Scores | 20 | 117.45 | 10.15 | 123.40 | 6.07 | 19 | 2.38 | .02 |

The results revealed that there was a statistically significant difference between the overall pre and post-test scores, $z$=2.38, $p$=.02 with a medium effect size (r=.38). Based on the statistically significant difference between the overall pre-test / post-test scores, another test was carried out to compare the groups in terms of attitudes towards multicultural attitude, prejudiced attitudes towards multicultural education and attitudes towards cultural differences. The results of the analysis are presented in Table 5.

**Table 5.** Wilcoxon signed-rank results regarding the groups' multicultural attitude and efficacy

| Dimension | n | Pre-Test | | Post-Test | | df | z | p |
|---|---|---|---|---|---|---|---|---|
| | | $\bar{X}$ | SD | $\bar{X}$ | SD | | | |
| ATME* | 20 | 26.10 | 3.28 | 33.10 | 2.22 | 19 | 3.93 | .000* |
| PATME** | 20 | 23.75 | 5.44 | 29.10 | 2.38 | 19 | 3.93 | .000* |
| ATDE*** | 20 | 18.40 | 2.70 | 23.60 | 3.55 | 19 | 3.97 | .000* |
| ATCD**** | 20 | 12.40 | 3.20 | 14.25 | 1.48 | 19 | 2.00 | .045* |

*$p$<.005 (ATME: Attitude Towards Multicultural Education, PATME: Prejudiced Attitude Towards Multicultural Education, ATDE: Attitude Towards Democracy Education, ATCD: Attitude Towards Cultural Differences).

When Table 5 is examined, it can be seen that there was a statistically significant difference with regards to ATME, $z$=3.93, $p$<.000 with a large effect (r=.62); PATME, z=3.93, $p$<.000 with a large effect size (r=.62); ATDE, $z$=3.97, $p$<.000 with a large effect (r=.63); and ATCD, z=2.00, $p$=.45 with a medium effect size (r=.32). These results indicated that the multicultural education course had a significant effect on participants' attitudes towards multicultural education, prejudice, democracy education and cultural differences.

In order to compare the results of the overall pre and post measures with regard to gender, years of experience and place of residence, Kruskal-Wallis tests were performed.

**Table 6.** The results of descriptive statistics with regard to gender-based on pre-test and post-test scores

| Test | | n | $\bar{X}$ | SD | Minimum | Maximum |
|---|---|---|---|---|---|---|
| Pre-test | Female | 9 | 117.22 | 10.95 | 104.00 | 132.00 |
| | Male | 11 | 117.64 | 9.98 | 97.00 | 135.00 |
| | Total | 20 | 117.45 | 10.15 | 97.00 | 135.00 |
| Post-test | Female | 9 | 126.89 | 3.33 | 121.00 | 131.00 |
| | Male | 11 | 120.55 | 6.42 | 110.00 | 129.00 |
| | Total | 20 | 123.40 | 6.07 | 110.00 | 131.00 |

**Table 7.** Kruskal-Wallis test results with regard to gender

| Test | df | H | p |
|---|---|---|---|
| Pre-test | 1 | 0.12 | .732 |
| Post-test | 1 | 5.44 | .020 |

The results presented in Table 7 demonstrated a statistically significant difference between female and male participants in favor of female teachers, $H$(1)=5.44, p=.020 for the post-test scores with a medium effect size (r=.30). On the contrary, there was not a significant difference between genders based on the pre-test scores, $H$(1)=0.12, $p$=.732.

**Table 8.** Kruskal-Wallis test results with regard to years of experience

| Test | Statistic[a] | df1 | H | p |
|---|---|---|---|---|
| Pre-test | 2.09 | 4 | 7.15 | .128 |
| Post-test | 2.29 | 4 | 2.46 | .652 |

When Table 8 is examined, it can be seen that the difference among the years of experience was not significant both for the pre-test scores, $H(4)=7.15$, $p=.128$, and post-test scores, $H(4)=2.46$, $p=.652$.

**Table 9.** The results of descriptive statistics with regard to the place of residence based on pre-test and post-test scores

| Test | | n | $\bar{X}$ | SD | Minimum | Maximum |
|---|---|---|---|---|---|---|
| Pre-test | City center | 7 | 122.14 | 8.57 | 107.00 | 132.00 |
| | District | 10 | 117.30 | 10.63 | 97.00 | 135.00 |
| | Village | 3 | 107.00 | 3.00 | 104.00 | 110.00 |
| | Total | 20 | 117.45 | 10.15 | 97.00 | 135.00 |
| Post-test | City center | 7 | 127.57 | 2.23 | 124.00 | 131.00 |
| | District | 10 | 120.30 | 6.78 | 110.00 | 129.00 |
| | Village | 3 | 124.00 | 4.36 | 121.00 | 129.00 |
| | Total | 20 | 123.40 | 6.07 | 110.00 | 131.00 |

**Table 10.** Kruskal-Wallis test results with regard to the place of residence

| Test | df | H | p |
|---|---|---|---|
| Pre-test | 2 | 0.96 | .329 |
| Post-test | 2 | 3.87 | .049 |

The results presented in Table 10 demonstrated a statistically significant difference with regard to the participants' place of residence, $H(2)=3.87$, $p=.049$ for the post-test scores with a low effect size (r=.20). On the contrary, the difference was not significant for the pre-test scores, $H(2)=.955$, $p=.329$. Post hoc comparisons for the pre-test scores using Games-Howell revealed that the mean score for the teachers living in a city center (M = 122.14, SD = 8.57) was significantly different from village residers (M = 107.00, SD = 3.00). In addition, the mean score for district (M = 117.30, SD = 10.63) was significantly different than village (M = 107.00, SD = 3.00). However, the scores of teachers residing in a city center (M = 122.14, SD = 8.57) did not significantly differ from the teachers living in a district (M = 117.30, SD = 10.63).

## Discussion

This study aimed to examine the effects of a graduate-level multicultural education course on teachers' attitudes towards multicultural education and cultural differences and prejudices against multicultural education. In addition, the effects of the course on democracy and democracy education were investigated in the study. Gollnick (1995) posits that in order for a course to be designed in accordance with multicultural education, it should include cultural aspects such as race, ethnic origin, the language of students with differences.

The results of the research revealed that the course has significant effects on teachers' attitudes towards multicultural education, cultural differences, democracy education and reduction of prejudicial attitudes. According to these findings, it can be said that a multicultural education course that will be added to the program offered in the field of educational sciences significantly improves the multicultural attitudes of the participants and reduces their prejudices. The findings obtained are also supported by Banks' theory regarding the approaches he has determined for multicultural education (Banks & Banks, 2010).

The findings also showed that a stand-alone multicultural education course designed for teachers significantly affects attitudes towards multicultural education and cultural differences positively. These findings are similar to the results of other studies investigating the effect of courses or in-class practices on

multicultural education (Hicks, Berger, & Generett, 2005; Jennings & Smith, 2002; Richardson et al., 2020; Ruales, Van Petegem, Tabudlong, & Agirdag, 2021). The reason for this could be the emergence of attitudes as a result of the individual's experiences or observations. Change or formation in attitudes can occur in many ways, and it is especially important to provide more experiences and observations in changing attitudes through learning (Seel, 2011). In addition, according to Grant and Secada (1990), the time spent by learners to learn new content and the time they are exposed to this content is related to the successful outcome of the learning. Other researchers also stated that teachers' attitudes towards multiculturalism increase when they are in environments with high cultural diversity and exposed to multicultural content (Pavone, 2011). Therefore, it can be claimed that through a course on multicultural education, which can create opportunities for new experiences, we might contribute to the formation of positive attitudes towards cultural differences.

The findings of the study also indicated that the course significantly increased the participants' attitudes towards democracy education. According to Gay (2004), multicultural education aims to achieve equal academic success and be productive citizens in a democratic society for all students regardless of their cultural background. Özen (2015) also affirms that multicultural education is directly related to the education of democratic citizens because it emphasizes the equal representation of students with such diversities as language, religion, race and sexual orientation in the education process, and the concepts of multiculturalism and democracy intersect many times. In this sense, multicultural education can be regarded as a means to a democratic society, and a change in attitude concerning democracy education can be achieved through a course on multicultural education; thus, promoting the idea that such courses might enable students to acquire the knowledge, skills and behaviors they need in order to become a member of a democratic society (Halvorsen & Wilson, 2010).

Another finding of the study showed that teachers' prejudicial attitudes towards multicultural education significantly decreased. Prejudice reduction is a meticulous and organized process. In this process, it is aimed to reduce or remove learners' negative attitudes regarding prejudice and discrimination in a way that encompasses cultural diversities. The findings obtained from the studies revealed that the courses that present the content about cultural differences are effective in reducing the prejudices of the learners and can help them develop more positive attitudes (Banks, 1995). In line with the findings of this study, Hogan and Mallott (2005) also asserted that courses on diversity help reduce the prejudiced thinking that individuals develop against other cultures. To this end, it can be stated that with the help of a stand-alone course, the prejudicial reactions of teachers, even after a few years of experience, can be diminished to a level that they could equally embrace students with diversities.

The study's findings also displayed a significant difference with regard to the place of residence based on the post-test scores. The results of several research studies affirmed that participants living in big cities have higher multicultural attitudes when compared to the individuals living in districts or villages (Bakır, 2020; Bulut & Başbay, 2014; Çoban, Karaman, & Doğan, 2010; Hong, Troutman Jr, Hartzell, & Kyles, 2010). According to the findings of these studies, it can be said that the more the life experiences of teachers in multicultural societies, the higher the attitudes they bear towards multiculturalism and multicultural education. However, this study revealed that after taking a 14-week multicultural education course, the difference became significant. The reason for this might be that after the learners were provided with the multicultural content throughout the course, and the awareness of the learners living in the city centers raised significantly because of they are more exposed to multicultural environments than other participants. The result signals that diversity coursework with exposure to diversities can help develop multicultural attitudes more effectively.

The results of the study regarding the effect of the gender variable revealed a significant difference for the post-test but a non-significant difference for the pre-test. While some studies investigating the effect of

gender on multicultural education showed that gender significantly affects the attitudes regarding diversities (Arslan & Çalmaşur, 2017; Çoban et al., 2010; Columna, Foley, & Lytle, 2010; Ford & Quinn, 2010; McCray & Beachum, 2010; Saracaloğlu, Evin, & Varol, 2004), some other studies indicated opposite findings (Bulut & Başbay, 2014; Karacabey, Ozdere, & Bozkus, 2019; Karatas, 2015; Özdemir & Dil, 2013; Polat, 2012). With regard to the significant difference in favour of female teachers at the end of the intervention, we might assert that women are more sensitive to cultural diversities. However, it can be noted that the gender variable is affected by other variables such as socio-economic status, region or city of residence and multicultural competence. Because of this a definite assessment cannot be made in evaluating multicultural attitudes in terms of gender.

The last finding obtained in the study revealed that years of experience have no significant effect on attitudes towards multicultural education. The studies investigating seniority also reached contradictory results. Although some studies reported similar findings to this study (Duran & Çalışkan, 2020; Karacabey et al., 2019; Karatas, 2015; Özdemir & Dil, 2013), some other studies indicated that years of experience significantly affected the attitudes towards cultural diversities (Bulut & Başbay, 2014; Evola, 2012; Rengi & Polat, 2014; Washington, 1981). Accordingly, it can be said that it is not clear whether the time spent in the teaching profession affects teachers' attitudes towards cultural differences and multicultural education.

## Conclusion, Implications and Limitations

The findings obtained in this study showed that a multicultural education course for teachers was effective in increasing teachers' attitudes towards multicultural education, cultural differences and democracy education and reducing their prejudices. Agirdag et al. (2016) argue that the studies about multicultural education mostly focus on teacher candidates and in-service teachers' attitudes, efficacies and beliefs about the processes of multicultural education are largely neglected. It is very important for the teachers who graduated from faculties that do not offer courses on cultural differences in teacher training programs to correctly manage the differences they encounter in their classes after starting their profession and achieving equal academic success for all their students. Gorski (2000) emphasizes that teachers have a double responsibility to develop attitudes towards cultural diversities and reduce prejudices that affect students' experiences, especially towards the affective domain and contribute to their cognitive development. Accordingly, it is necessary to offer courses on multiculturalism through graduate programs or in-service training in order to increase teachers' attitudes towards multicultural education and to reduce their prejudices. These teachers can also contribute to changing the perspective of society by improving the understanding of differences in their classrooms.

This study, to the best of my knowledge, which is the first experimental study conducted in Turkey with teachers, has a few implications. Firstly, policymakers and developers of teacher training programs should emphasize the importance of multicultural education by taking steps to increase the attitude, efficacy and awareness of both in-service teachers and teacher candidates through the courses to be added to the programs. Secondly, since the results of this research and similar research shed light on in-service and pre-service teacher training processes, updates should be made in the current education programs in line with the findings. Because as the cognitive hierarchy model of human behavior suggests, attitudes act as antecedents of behaviors (Fulton et al., 1996). Therefore, by altering the attitudes, it might also be possible to change teachers' observable behaviors towards diversities.

This study has some limitations inherent to the one-group quasi-experimental studies. One of the limitations of this design is the absence of a control or comparison group. Another limitation of the study is that the random sampling method was not used; this limited the study's ability to establish a causal relationship between the intervention and the results. The current study is limited to the teachers taking the

fundamentals of multicultural education course. Finally, the use self-report survey, the limitations of which are well documented in the social science literature.

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International Online Journal of Educational Sciences

ISSN: 1309-2707

# Investigation of the Relationship between the Perfectionism and Self-Efficacy of Gifted Children

*Research Article*

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**To cite this article:** Akkaya, S., & Dogan, A., & Tosik, H. (2021). Investigation of the relationship between the perfectionism and self-efficacy of gifted children**,** *International Online Journal of Educational Sciences*, *13*(5), 1503-1524.

ARTICLE INFO

*Article History*:

Received:
03.05.2021

Available online:
03.09.2021

ABSTRACT

The aim of this study is to examine the relationship between the perfectionism and self-efficacy of gifted children. In this study, Child and Adolescent Perfectionism Scale and Self-Efficacy Scale for Children will be used as data collection tools. The research was carried out by scanning design, one of the quantitative research methods. While selecting the sample of the study, criterion sampling, which is the purposeful sampling type, was used. In the study, the sampling criteria of the students were considered as SAC (Science and Art Centers) students, who were diagnosed as being gifted. Participation in the study is entirely voluntary. The study group of the research consists of 507 students (3rd, 4th, 5th, 6th, 7th and 8th grades) studying in SAC various provinces of Turkey. The obtained data were analyzed with the descriptive and complementary statistical method. While there is no significant difference in the child and adolescent perfectionism levels of gifted students according to gender and the independent variables of the period they studied at SAC, there is a significant difference according to the independent variables of school type, grade levels, number of siblings and ranking among siblings. While there is no significant differentiation in the self-efficacy levels of gifted students according to gender, school type and number of siblings' independent variables, there is a significant difference in class levels, periods of study in SAC, and ranking independent variables between siblings. It was concluded that there was no significant and positive relationship between the answers given by gifted students to the Child and Adolescent Perfectionism Scale and the answers they gave to the Children's Self-Efficacy Scale.



**Keywords:**
giftedness, perfectionism, self-efficacy

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DOI: https://doi.org/10.15345/iojes.2021.05.013

## Introduction

In Turkey, the general definition for a gifted individual is "an individual that shows high-level performance than peers in intelligence, creativity, arts, sports, leadership capacity or special academic fields" (MEB, 2009). The gifted children are the individuals who need a special curriculum and education services than the general curriculum, have high academic success, creativity, leadership characteristics in certain areas, high cognitive development, learn faster than the peers, have a highly developed sense of responsibility, continuously ask complex questions to older individuals, have a sense of curiosity, have high linguistic levels, continuously competes to himself/herself or the best peer to meet the high-level success expected by the family and teachers (Akarsu & Mutlu, 2017; Oztabak, 2018). Although the gifted individuals considered as one of the special education fields gained importance recently, it is considered by our society as an area with extreme efforts since it is applied to the limited number of individuals and groups and the importance to these individuals by our society is disregarded (Ozbay & Palanci, 2011).

In addition to the experiences of the peers with normal development, the gifted children have characteristics such as high empathy skill, a high sense of fairness, critical thinking skill, perfectionism and analysis skills (Altun & Yazici, 2018). Gifted individuals have attracted the attention of societies because of the differences they have in the societies they live in. When the relevant literature is examined, the general characteristics of gifted individuals who attract the attention of the society, which differ positively from their peers in both cognitive and affective areas, are high academic achievement, fast learning, fast comprehension, strong memory, high attention, wide knowledge base and rich vocabulary There are features such as the ability to solve and analyze, wide range of interests, high motivation, curiosity and determination. Gifted people constitute a group that is closely related to the quality of human resources of a society. These individuals are members of a group that is separated from other individuals in the society with their affective, cognitive, metacognitive and psycho-motor characteristics and constitute approximately 2% of the society. Gifted individuals are defined as individuals who perform at a higher level than their peers in special academic fields or in terms of intelligence, creativity, and art and leadership capacity. Despite the multi-criteria definition expressed, the World Health Organization used IQ scores to define giftedness(Akkaya & Ertekin, 2021; Koksal &Akkaya, 2017).As a result of all these definitions, it is possible to state that gifted individuals have a higher level of cognitive, social and emotional skills than peers, excessive commitment to the responsibilities assigned to them, rich vocabulary, always have questions in mind, think critically, question the information without accepting it as it is, do not like memorising, have empathy skills, with high sense of fairness, have high respect to rights of others and learn faster than peers.

The gifted individuals' effective use of their potential towards their target is linked with the healthy mental state of these individuals. It is necessary to predict the situations that might have a negative impact on gifted individuals' mental development and necessary precautions should be taken (Toplu, 2013).

### Definition of Gifted Children

The early childhood period is the period where the characters of individuals start to develop, talents are discovered and the future is guided and this period includes identification, diagnosis and guidance activities. In this period, teachers play an important role to identify how much these individuals have the characteristics observed by the families. For the gifted individuals to be evaluated and assessed by the teachers, teachers need to do various activities with various characteristic with these students. After these activities, teachers must identify the skills of these students correctly, interpret the skills correctly and guide the individuals' families for a higher level education for the children (MindivanliAkdogan et al., 2017).

The first duty in the gifted students' diagnosis lies in the families. Families need to spend time with their children in addition to spending time on their work and themselves, show interest to their children and

observe the children in their own worlds. With these observations, parents will get the chance to closely witness and monitor the memory, questions, jokes, how to children create games, which games they play, the dialogues in these games and their excitement against the events. The families listed the characteristic of the gifted children since the early ages as excessive curiosity, superior memory, fast learning, fast comprehension, early reading-writing, generalising events and observations (Bildiren, 2018; Cetinkaya & Inci, 2019).

The gifted individuals have unique skills and differences just like all other individuals. It is incorrect to try to identify and diagnose gifted individuals with one method. The main purpose of education for gifted individuals is to identify gifted individuals in all aspects and educate them for their potential. Therefore, it is more accurate to use valid, realistic and objective methods to diagnose gifted individuals (Davisligil, 2004).

**Characteristics of Gifted Children**

While gifted individuals can show high success in various fields, they can lag behind their peers in some fields. Therefore, identification of the gifted individuals' strengths and weaknesses by their teachers is important to improve their strengths to a higher level, identify the reason for weaknesses and help to gain these skills (Daglioglu, 2010).

The gifted children are notices by their parents and teachers throughout their life due to their difference and superiorities. The gifted individuals are different from the individuals with normal development and can also show different characteristics compared to other gifted individuals. Gifted individuals are individuals separated from other individuals when they combine their characteristics such as contributing to discoveries and inventions, bring different perspectives to events and situations, decisiveness, curiosity and discover with their skills (Yakmaci Guzel, 2004).

The characteristics of gifted individuals have been investigated under various titles. While Sahin (2015) investigated the characteristics of the gifted individuals under five different titles including physical and motor development, brain development, cognitive development, linguistic development and social and emotional development, Uyanik, (2007) investigated under three titles including physical characteristics, mental characteristics and social and emotional characteristics and Inci, (2014) investigated under four titles including physical characteristics, mental characteristics, social characteristics and personal characteristics ( Inci, 2014; Sahin, 2015; Uyanik, 2007) In this section of this study, characteristics of the gifted individuals are investigated under three titles as cognitive characteristics, socio-emotional characteristics and personal characteristics.

**Cognitive Characteristics of Gifted Children**

The cognitive development speed of the gifted children who show a faster development than peers in all development areas significantly differentiate from other development areas. The gifted children cognitively differentiate from their peers for the attention duration intensity to their fields of interest, curiosity for all topics, questions with complex structures and being open and ready to knowledge, learning in all topics (Bildiren, 2018).

The gifted children show the difference in the cognitive field by asking challenging questions, in-depth thinking skills, intense effort to solve a problem, showing different methods to solve the problems, do not accept the things they do not find logical and try to make it work for their logic, in-depth investigation of the problems and fast learning skills (Gur, 2017).

The gifted children's cognitive skills such as abstract thinking, applying what they learn to their life and different fields of the classes, learning reading and writing fast, interest in intelligence games since they

love complexity, memorising what they learn for a long time, in-depth approach to reasons of the problems differentiate from their peers and develop faster than their peers (Toplu, 2013).

Gifted individuals show different characteristics than their peers in many fields. The most distinctive characteristic is to have different and superior skills in terms of cognitive properties. The cognitive capacity of gifted individuals is rapidly detected by their parents and teachers. These individuals can easily see the links and relationships between the events and try to reach the perfect by being encouraged with competitive emotions ( Inci, 2014).

By using the definitions for the gifted children's cognitive characteristics, it is possible to say that these individuals have various cognitive characteristics such as fast thinking, showing themselves by thinking differently and extraordinarily than their peers and society, in-depth analysis of the cause-effect of the events, focusing on the most perfect form to continuously compete with self and people around them, interest to intelligence games, continuously asking questions, advanced linguistic skills, having entrepreneur characteristics and analytic thinking skills.

**Socio-Emotional Characteristics of Gifted Children**

The gifted individuals differentiate from their peers and other individuals in the society since they have different ideas and feel different emotions. Gifted individuals with unique developmental characteristic might experience conflicts with peers both in a social and emotional sense. The gifted individuals that have ethics, knowledge, emotion, thought and emotions that they need to have at an advanced age in an early age might sometimes cause them to struggle to understand their peers and they might experience communication problems with their peers. Compared to their peers, these children are individuals with high empathy emotion that they put themselves in the shoes of others, high sense of belonging, objecting against unfairness and high self-confidence that questions this situation (Gur, 2017).

The gifted children's different developments in all areas cause differentiation in social and emotional fields as well. Compared to their peers with normal development, the gifted children have an in-depth investigation, questioning, sensing injustice and compassion. This high socio-emotional awareness of the gifted children contributes to their skills to generalise events and situations which is expected at a more advanced age (Bildiren, 2018).

The socio-emotional skills of gifted individuals include various fields such as communication problem-solving, empathy, self-respect. The gifted individuals with supported communication skills due to early linguistic development have skills to express themselves correctly and listen to others while they are more advanced in other fields compared to their peers. Self-respect develops earlier in the gifted children compared to their peers with normal development. The gifted children that are noticed with their high-level skills and competencies have high self-confidence due to their high academic success. However, the self-confidence of these children might be negatively affected due to high success expectations from their families and teachers and alienation by peers due to differences (Sevgili Kocak, 2020).

The gifted children that show earlier development in the socio-emotional area just like all development areas might experience positive and negative effects of early social and emotional development. With their advanced linguistic skills, gifted children can struggle to understand, communicate and conceive the behaviours of their peers and they can communicate easier with a sense of humour, leadership characteristic, who are loved and more advanced aged individuals.

**Personal Characteristics of Gifted Children**

The most distinctive personal characteristics that differentiate gifted individuals from peers with normal development are excessive interest in everything, perfectionism, their ambition to achieve success

targets and high self-confidence. The gifted individuals experience high pleasure from the intense efforts to achieve success and the results they achieve (Ozcan & Mertol, 2015).

The underlying factor for the efforts to reach the perfect of gifted individuals who put challenging targets that require high efforts and achieve the perfect results is to meet the expectations of both their families and teachers (Bildiren, 2018).

In terms of personal characteristics, the gifted individuals are different from their peers with normal developments for self-confidence, understanding their sufficient and insufficient aspects to develop the insufficient ones, realising the mistakes and criticising these mistakes by accepting them, enjoying challenging fights and not giving up easily against these challenges, continuously asking questions to scrutinize the things with both their curiosity and putting things inside a logical framework and desire to be a team-game builder with their leader personal characteristics (Bildiren, 2018; Toklu, 2019).

The gifted individuals' personal characteristics include interest and curiosity to read books, being compassionate against humans-nature-animals, making self-criticism, questioning the authority due to continuous questioning without accepting things and individuals as they are and the effort to be perfect to meet the expectations of the people around them. If these individuals cannot reach the perfect as the top target, they have set for themselves, they believe that they will not be accepted and will be alienated by their families and teachers. This is an important problem for gifted children and the parents-teachers need to talk about this problem with the children and explain why this cannot happen ( Ilter, 2015).

**Perfectionism and Self Efficacy**

Perfectionism that is born out of the approval, appreciation and acceptance need by parents, teachers and peers is the effort to reach the challenging target set by the individuals. At the same time, individuals fear making mistakes with these intense efforts to reach the identified challenging targets and experience intense tension. Individuals with perfectionist characteristics put an exaggerated effort to reach a target (Akca, 2020).

Perfectionism is a multi-dimensional personal characteristic and it is excessive efforts by the individual to reach the perfect thing. For perfectionist individuals, the perfect is a real and achievable target that is not impossible (Gul et al., 2009).

These individuals that equate the value assigned by the individuals and the people around them with being perfect have characteristics such as being impeccable, have targets with high standards set by them and being the best in all fields of life (Kahraman, 2013).

The innate potential and perfectionism which is also believed to be innate (Adler, 1997) is the individual's efforts to reach the best and the most challenging. Individuals with perfectionism characteristic are criticised by the people around them because of their insistence on intense efforts to reach their targets (Boydak, 2019).

The researchers identified three dimensions of perfectionism which are "self-oriented", "oriented to others" and "based on social expectations". In self-oriented perfectionism where individuals set challenging and impossible to reach targets and put efforts to reach them, individuals are close to personal criticism and do not easily accept their mistakes. In perfectionism oriented to others, individuals set high standard targets for other individuals around them and expect these individuals to reach these high standard targets. Perfectionism based on social expectations which the individual believes that the society expects the best, more perfect and even the impossible things is thinking that the individual will not be accepted, approved and will be alienated if the individual cannot meet these expectations (Flett et al., 1997; Flett et al., 1998). Self-

efficacy beliefs are an important factor affecting the motivation required for gifted children to realize their potential. It is also included in special talent theories(Kacmaz & Demirtas, 2020).

In this study, it is aimed to examine the relationship between the perfectionism and self-efficacy of gifted children. In the research, answers to the questions given below were sought.

1. Do child and adolescent perfectionism levels of gifted students differ significantly according to the gender, school type, class level variable, knowing periods, number of siblings' variables and the ranking variable between siblings?

2. Do gifted students' self-efficacy levels for children differ significantly according to the gender, school type, class level variable, knowing periods, number of siblings' variables and the ranking variable between siblings?

3. What is the relationship between gifted students' levels of child and adolescent perfectionism and their self-efficacy levels for children?

## Method

In this study, the correlational model was used to examine the relationship between the perfectionism and self-efficacy of gifted children. In these studies, data are collected to determine certain characteristics of a group and the relationship between two or more variables is tried to be determined (Buyukozturk et al., 2012).

### Study Group

**Table 1.** Characteristics of Participant Gifted Students

| Variable | Characteristics of Participant Students | f | % |
|---|---|---|---|
| Gender | Female | 235 | 46.4 |
| | Male | 272 | 53.6 |
| | Total | 507 | 100 |
| School Type Other Than SAC | Public School | 338 | 66.7 |
| | Private School | 169 | 33.3 |
| | Total | 507 | 100 |
| Grade Level | 3.Grade | 44 | 8.7 |
| | 4. Grade | 86 | 17.0 |
| | 5. Grade | 155 | 30.6 |
| | 6. Grade | 96 | 18.9 |
| | 7. Grade | 55 | 10.8 |
| | 8. Grade | 71 | 14.0 |
| | Total | 507 | 100 |
| Term in SAC | SUPPORT | 110 | 21.7 |
| | ISD (Individual Skill Development) | 269 | 53.1 |
| | SSD (Special Skill Development) | 78 | 15.4 |
| | PROJECT | 50 | 9.9 |
| | Total | 304 | 100 |
| Number of Siblings | Only Child | 85 | 16.8 |
| | 2 Siblings | 263 | 51.9 |
| | 3 Siblings | 114 | 22.5 |
| | 4 Siblings | 29 | 5.7 |
| | 5 or More Siblings | 16 | 3.2 |
| | Total | 507 | 100 |

| | | | |
|---|---|---|---|
| Sibling Age Rank | 1. Child | 321 | 63.3 |
| | 2. Child | 112 | 22.1 |
| | 3. Child | 48 | 9.5 |
| | 4. Child | 13 | 2.6 |
| | 5 or Higher | 8 | 1.6 |
| | Twins | 5 | 1.0 |
| | Total | 507 | 100 |

A total of 507 gifted students, 235 girls and 272 boys, participated in the study group. While 338 of these students attend public school, 169 of them attend private school. The majority of the participant group is middle school 5th grade students and predominantly ISD (Individual Skill Development) period students.

**Data Analysis**

The scale used in this study was applied to gifted children by the researchers at an online setting and data was collected. The students with gifted child diagnosis and studying in SAC (Science and Art Centre) were selected. To avoid collecting data from the same region, data was collected from various SACs in each region of Turkey. SPSS package 26 program and Microsoft Excel program were used in statistical data analysis.

In this study, data obtained from two scales applied to gifted students were analysed and Cronbach's Alpha reliability coefficients were calculated.

The gifted children's Cronbach's Alpha reliability coefficient from the Child and Adolescence Perfectionism Scale was calculated as 0.89 and Cronbach's Alpha reliability coefficient from Self-Efficacy Scale for Children was calculated as 0.90. When the reliability coefficients were considered, it could be said that the obtained data was reliable (Buyukozturk et al., 2012).

Kolmogorov-Smirnov and Shapiro-Wilk tests were conducted to test the data distribution normality for both scales applied to 507 gifted students. It is recommended to use the Shapiro-Wilks test when the number of data is smaller than 30 and the Kolmogorov-Smirnov test when the number of data is larger than 30 (Kalayci, 2008). Since the amount of data in this study was high, data distribution normality was tested with Kolmogorov-Smirnov (Lilliefors) test. A P-value higher than 0.05 signifies that the data fit the normal distribution. The normality values for the applied scale are given in Table 2.

**Table 2.** Normality Values of Applied Scale

| | **Kolmogorov-Smirnov[a]** | | | **Kolmogorov-Smirnov[a]** | | |
|---|---|---|---|---|---|---|
| | **Statistics** | **df** | **p** | **Statistics** | **df** | **p** |
| Child and Adolescence Perfectionism Scale | 0.40 | 507 | 0.051 | 0.984 | 507 | 0.000 |
| Self-Efficacy Scale for Children | 0.45 | 507 | 0.016 | 0.991 | 507 | 0.002 |

a. Lilliefors Significance Correction

The data obtained from the gifted students in the Child and Adolescence Perfectionism Scale showed normal distribution ($p>0.05$). The data collected from the Self-Efficacy Scale for Children did not show normal distribution according to the Kolmogorov-Smirnov normality test ($p<0.05$). However, since the skewness and kurtosis values were between +0.084 and -0.336, it can be said that the data has a normal distribution. According to Tabachnick and Fidell (2013), the obtained data shows normal distribution when the skewness and kurtosis values are between -1.5 and +1.5.

## Findings

The data obtained from the study group was analysed and presented in tables. The answers to the Child and Adolescence Perfectionism Scale were given in the table below.

**Table 3.** Gifted Children's Percentage-Frequency Table to Answers to Child and Adolescence Perfectionism Scale

| Scale Items | n % | Not Suitable | Mostly Not Suitable | Neither Right nor Wrong | Mostly Right | Right |
|---|---|---|---|---|---|---|
| 1. Imake sure everything Ido is perfect. | n | 20 | 21 | 95 | 174 | 197 |
| | % | 3.9 | 4.1 | 18.7 | 34.3 | 38.9 |
| 2. Iwant to be the best in everything Ido. | n | 22 | 23 | 74 | 154 | 234 |
| | % | 4.2 | 4.5 | 14.6 | 30.4 | 46.2 |
| 3. Ihave people in my life who expect me to be perfect. | n | 44 | 25 | 97 | 122 | 219 |
| | % | 8.7 | 4.9 | 19.1 | 24.1 | 43.2 |
| 4. Ialways try to get the highest grade from the exam. | n | 19 | 18 | 55 | 116 | 299 |
| | % | 3.7 | 3.6 | 10.8 | 22.9 | 59.0 |
| 5. Not doing the best Ican always makes me feel uncomfortable. | n | 50 | 36 | 91 | 134 | 196 |
| | % | 9.9 | 7.1 | 17.9 | 26.4 | 38.7 |
| 6. My family expects me to be perfect. | n | 46 | 36 | 105 | 132 | 188 |
| | % | 9.1 | 7.1 | 20.7 | 26.0 | 37.1 |
| 7. People expect of me more than Ican do. | n | 108 | 60 | 141 | 105 | 93 |
| | % | 21.3 | 11.8 | 27.8 | 20.7 | 18.3 |
| 8. Iam very angry at myself when Imake a mistake. | n | 34 | 67 | 103 | 136 | 167 |
| | % | 6.7 | 13.2 | 20.3 | 26.8 | 32.9 |
| 9. If Ican't always do the best, Ican, other people will think Iam unsuccessful. | n | 103 | 69 | 126 | 81 | 128 |
| | % | 20.3 | 13.6 | 24.9 | 16.0 | 25.2 |
| 10. Other people always expect me to be perfect. | n | 73 | 54 | 144 | 114 | 122 |
| | % | 14.4 | 10.7 | 28.4 | 22.5 | 24.1 |
| 11. If there is a mistake in my homework, Ifeel down. | n | 86 | 70 | 101 | 109 | 141 |
| | % | 17.0 | 13.8 | 19.9 | 21.5 | 27.8 |
| 12. People around me expect to be perfect in everything. | n | 94 | 64 | 134 | 102 | 113 |
| | % | 18.5 | 12.6 | 26.4 | 20.1 | 22.3 |
| 13. Everything Ido must be perfect. | n | 41 | 48 | 115 | 130 | 173 |
| | % | 8.1 | 9.5 | 22.7 | 25.6 | 34.1 |
| 14. Teacher expect my homework to be perfect. | n | 36 | 46 | 119 | 140 | 167 |
| | % | 7.1 | 8.9 | 23.5 | 27.6 | 32.9 |
| *15. Idon't have to be the best in everything Ido. | n | 68 | 56 | 114 | 89 | 180 |
| | % | 13.4 | 11.0 | 22.5 | 17.6 | 35.5 |
| 16. It is always expected me to better than others. | n | 55 | 53 | 114 | 132 | 153 |
| | % | 10.8 | 10.5 | 22.5 | 26.0 | 30.2 |
| 17. If Ididn't get one of the highest grades in the class, Ifeel unsuccessful even though Iam successful. | n | 101 | 51 | 109 | 95 | 151 |
| | % | 19.9 | 10.1 | 21.5 | 18.7 | 29.8 |
| 18. Ifeel like people are asking a lot of things from me. | n | 64 | 62 | 120 | 105 | 156 |
| | % | 12.6 | 12.2 | 23.7 | 20.7 | 30.8 |

It is seen that the scores to be taken from the Child and Adolescence Perfectionism Scale are individually moderate. But it's also important to see special cases like the " Idon't have to be the best at everything Ido" clause.

The table including the gifted students' answers to the Self-Efficacy Scale for Children is given below.

**Table 4.** Gifted Children's Percentage-Frequency Table to Answers to Self-Efficacy Scale for Children

| Scale Items | n % | Never | Sometimes | Slight Good | Good | Very Good |
|---|---|---|---|---|---|---|
| 1. How well can you express your thoughts when your classmates do not have the same view as you do? | n | 22 | 66 | 123 | 127 | 169 |
| | % | 4.3 | 13.0 | 24.3 | 25.0 | 33.3 |
| 2. How much can you increase your morale when you experience a negative event? | n | 34 | 141 | 112 | 115 | 105 |
| | % | 6.7 | 27.8 | 22.1 | 22.7 | 20.7 |
| 3. How well can you study when there are other interesting things? | n | 43 | 130 | 126 | 116 | 92 |
| | % | 8.5 | 25.6 | 24.9 | 22.9 | 18.1 |
| 4. How well can you calm down when you are very afraid? | n | 30 | 134 | 117 | 112 | 114 |
| | % | 5.9 | 26.4 | 23.1 | 22.1 | 22.5 |
| 5. How well you are to have friendships with other children around you? | n | 21 | 68 | 119 | 94 | 205 |
| | % | 4.1 | 13.4 | 23.5 | 18.5 | 40.4 |
| 6. How well can you study a unit you need to study for the exam? | n | 9 | 42 | 403 | 149 | 204 |
| | % | 1.8 | 8.3 | 20.3 | 29.4 | 40.2 |
| 7. How well are you to talk to someone you do not know? | n | 91 | 145 | 116 | 70 | 85 |
| | % | 17.9 | 28.6 | 22.9 | 13.8 | 16.8 |
| 8. How well can you control your nerves? | n | 49 | 151 | 133 | 93 | 81 |
| | % | 9.7 | 29.8 | 26.2 | 18.3 | 16.0 |
| 9. How successful you are to complete your homework every day? | n | 9 | 57 | 86 | 129 | 226 |
| | % | 1.8 | 11.2 | 17.0 | 25.4 | 44.6 |
| 10. How well do you work with your classmates? | n | 10 | 44 | 116 | 129 | 208 |
| | % | 2.0 | 8.7 | 22.9 | 25.4 | 41.0 |
| 11. How well can you control your emotions? | n | 37 | 105 | 138 | 121 | 106 |
| | % | 7.3 | 20.7 | 27.2 | 23.9 | 20.9 |
| 12. How well can you focus during the class? | n | 3 | 54 | 127 | 146 | 177 |
| | % | 0.6 | 10.7 | 25.0 | 28.8 | 34.9 |
| 13. How well can you describe when the other children around you do something you don't like? | n | 29 | 72 | 125 | 126 | 155 |
| | % | 5.7 | 14.2 | 24.7 | 24.9 | 30.6 |
| 14. How well you are to motivate yourself when you are not feeling good? | n | 43 | 130 | 119 | 104 | 111 |
| | % | 8.3 | 25.6 | 23.5 | 20.5 | 21.9 |
| 15. How well are you to understand all classes at school? | n | 4 | 25 | 80 | 154 | 244 |
| | % | 0.8 | 4.9 | 15.8 | 30.4 | 48.1 |
| 16. How well can you describe a funny event to a student group? | n | 12 | 76 | 99 | 120 | 200 |
| | % | 2.4 | 15.0 | 19.5 | 23.7 | 39.4 |
| 17. How well can you satisfy your parents with your studies at school? | n | 18 | 43 | 102 | 156 | 188 |
| | % | 3.6 | 8.5 | 20.1 | 30.8 | 37.1 |
| 18. How successful you are to sustain your friendships with other children? | n | 8 | 30 | 98 | 150 | 221 |
| | % | 1.6 | 5.9 | 19.3 | 29.6 | 43.6 |
| 19. How well you are to suppress the thoughts that disturb you? | n | 42 | 129 | 127 | 119 | 90 |
| | % | 8.3 | 25.4 | 25.0 | 23.5 | 17.8 |
| *20. How well you are to pass any exam? | n | 0 | 13 | 56 | 165 | 273 |
| | % | 0.0 | 2.6 | 11.0 | 32.5 | 53.8 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 21. How well you are not to worry about the things possible to happen? | n | 55 | 134 | 127 | 112 | 79 |
| | % | 10.8 | 26.4 | 25.0 | 22.1 | 15.6 |

Gifted students' answers to the Self-Efficacy Scale for Children is general at a good level. "How well you are to pass any exam?" The answers given are quite remarkable. It can be said that gifted students do not have any problems in terms of self-confidence and they think that they are sufficient in fulfilling a job or homework.

**Table 5.** Gifted Students' Child and Adolescence Perfectionism Scale Results for Gender Variable

| Gender | n | X | Sd | t | p |
|---|---|---|---|---|---|
| Female | 235 | 3.65 | 0.804 | 1.893 | 0.059 |
| Male | 272 | 3.52 | | | |

*p>0.05

Gifted students' Child and Adolescence Perfectionism Scale showed no statistically significant results for gender variable (p>0.05). However, when the score averages were considered, it is possible to state that gifted female students had higher perfectionism level than gifted male students.

**Table 6.** Gifted Students' Child and Adolescence Perfectionism Scale Results for School Type Variable

| Gender | n | X | Sd | t | p |
|---|---|---|---|---|---|
| Public School | 338 | 3.51 | 0.716 | -3.096 | 0.002 |
| Private School | 169 | 3.73 | | | |

*p<0.05

Gifted students' Child and Adolescence Perfectionism Scale showed statistically significant results in favour of students in private sectors for school types variable (p<0.05). This difference might be due to higher school, family and environmental pressure on gifted students in private schools. This might be affected by the race of private schools to advertise successful students to get new successful students.

**Table 7.** Comparison of Gifted Students' Child and Adolescence Perfectionism Scale Mean Scores for Class Level

| Classes | n | $\overline{X}$ | Sd | Variance Source | Sum of Squares | Sd | Mean Square | F | p |
|---|---|---|---|---|---|---|---|---|---|
| 3. Grade | 44 | 3.46 | 1.111 | Intergroup | 6.824 | 5 | 1.365 | | |
| 4. Grade | 86 | 3.59 | 0.658 | In-Group | 297.134 | 501 | 0.593 | 2.301 | 0.044 |
| 5. Grade | 155 | 3.50 | 0.693 | Total | 303.958 | 506 | 1.958 | | |
| 6. Grade | 96 | 3.79 | 0.787 | | | | | | |
| 7. Grade | 55 | 3.66 | 0.850 | | | | | | |
| 8. Grade | 71 | 3.49 | 0.713 | | | | | | |
| Total | 507 | 3.58 | 0.775 | | | | | | |

p<0.05

When the data in Table 6 were investigated, a statistically significant result was obtained from gifted students' Child and Adolescence Perfectionism Scale for class levels (p<0.05). According to the BonferroniPost Hoc Test result which is one of the multivariate comparisons tests to identify this difference, there was only a significant difference between the 6th grades and 3rd, 5th and 8th grades. It can be seen that the 6th-grade gifted students had a higher perfectionism level than students in other grades. It was seen that gifted students' Child and Adolescence Perfectionism Scale level average was 3.58 for class levels.

**Table 8.** Comparison of Gifted Students' Child and Adolescence Perfectionism Scale Mean Scores for SAC Term

| Classes | n | $\overline{X}$ | Sd | Variance Source | Sum of Squares | Sd | Mean Square | F | p |
|---|---|---|---|---|---|---|---|---|---|
| Support | 110 | 3.56 | 0.875 | Intergroup | 1.146 | 3 | 0.382 | 0.634 | 0.593 |
| ISD | 269 | 3.60 | 0.726 | In-Group | 302.812 | 503 | 0.602 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SSD | 78 | 3.63 | 0.797 | Total | 303.958 | 506 | 0.984 |
| Project | 50 | 3.46 | 0.770 | | | | |
| Total | 507 | 3.58 | 0.775 | | | | |

p>0.05

Gifted students' perfectionism levels showed no statistically significant results for their SAC terms (p>0.05). However, when the terms were considered, the lowest perfectionism level was for the project and support term and the highest perfectionism level was for the SSD term. The reason for gifted students' low perfectionism level in the project period might be due to creating various projects, joining contests, being educated in SACs with their schools despite being educated for their talents for long years. When it is considered that the support term covered the first years of primary school and students with gifted student diagnosis just started to get new education, this result might be normal.

**Table 9.** Comparison of Gifted Students' Child and Adolescence Perfectionism Scale Mean Scores for Number of Siblings

| Classes | n | $\bar{X}$ | Sd | Variance Source | Sum of Squares | Sd | Mean Square | F | p |
|---|---|---|---|---|---|---|---|---|---|
| Only Child | 85 | 3.84 | 0.975 | Intergroup | 14.298 | 4 | 3.574 | 6.195 | 0.00 |
| 2 Siblings | 263 | 3.49 | 0.679 | In-Group | 289.660 | 502 | 0.577 | | |
| 3 Siblings | 114 | 3.64 | 0.673 | Total | 303.958 | 506 | 4.151 | | |
| 4 Siblings | 29 | 3.74 | 0.821 | | | | | | |
| 5 or Higher | 16 | 3.01 | 1.118 | | | | | | |
| Total | 507 | 3.58 | 0.775 | | | | | | |

p<0.05

Gifted students' perfectionism levels showed no statistically significant results for their number of siblings (p>0.05). Only child gifted students' perfectionism levels were considerably higher than students with siblings. This result is possible since the family shows the entire interest in one child and support more in academic, social and cultural terms. Because the lowest perfectionism level was found for gifted students with 5 or more siblings. Since the interest and academic support per child decreases as the number of siblings increase in the family, this difference might be considered normal. According to One-Way Variance Analysis (ANOVA) to determine which sub-groups differentiated for the number of siblings' variable and Post-Hoc BonferroniTest results, there was a statistically significant difference for gifted students with 5 or more siblings and gifted students with 2 siblings.

**Table 10.** Comparison of Gifted Students' Child and Adolescence Perfectionism Scale Mean Scores for Sibling Rank

| Classes | n | $\bar{X}$ | Sd | Variance Source | Sum of Squares | Sd | Mean Square | F | p |
|---|---|---|---|---|---|---|---|---|---|
| 1. Rank | 321 | 3.62 | 0.777 | Intergroup | 7.537 | 5 | 1.507 | | |
| 2. Rank | 112 | 3.60 | 0.688 | In-Group | 296.421 | 501 | 0.593 | 2.548 | 0.027 |
| 3. Rank | 48 | 3.47 | 0.805 | Total | 303.958 | 506 | 2.100 | | |
| 4. Rank | 13 | 3.63 | 0.700 | | | | | | |
| 5 and Above | 5 | 2.61 | 1.252 | | | | | | |
| Twins | 8 | 3.13 | 1.050 | | | | | | |
| Total | 507 | 3.58 | 0.775 | | | | | | |

p<0.05

Gifted students' perfectionism levels showed statistically significant results for their sibling rank (p>0.05). Other than gifted students that rank 5 or higher among the siblings or twins, all other gifted students showed similar perfectionism level. However, it can be said that the gifted students who had 5 or higher rank among the siblings had lower perfectionism levels than other students. According to One-Way Variance Analysis (ANOVA) to determine which sub-groups differentiated for the sibling rank variable and Post-Hoc BonferroniTest results, there was a statistically significant difference for gifted students with 5 or

higher ranks among the siblings and all other gifted student groups. The low perfectionism level in students with twins might be due to the comparison between the siblings in every task.

**Table 11.** Gifted Children's Answers to Self-Efficacy Scale for Children for Gender Variable

| Gender | n | X | Sd | t | p |
|---|---|---|---|---|---|
| Female | 235 | 3.57 | 0.645 | -0.930 | 0.353 |
| Male | 272 | 3.62 | | | |

*p>0.05

Gifted students' Self-Efficacy Scale for Children showed no statistically significant results for gender variable (p>0.05). However, when the score averages were considered, it is possible to state that gifted female students had lower self-efficacy level than gifted male students.

**Table 12.** Gifted Children's Answers to Self-Efficacy Scale for Children for School Type Variable

| Gender | n | X | Sd | t | p |
|---|---|---|---|---|---|
| Public School | 338 | 3.57 | 0.609 | -1.115 | 0.265 |
| Private School | 169 | 3.64 | | | |

*p>0.05

Gifted students' Self-Efficacy Scale for Children showed no statistically significant results for the school type variable (p>0.05). It is possible to state that gifted students' self-efficacy scores in both private school and public school were similar. The reason for that could be the same curriculum in both institutions.

**Table 13.** Comparison of Gifted Self-Efficacy Scale for Children Mean Scores for Class Level

| Classes | n | $\overline{X}$ | Sd | Variance Source | Sum of Squares | Sd | Mean Square | F | p |
|---|---|---|---|---|---|---|---|---|---|
| 3. Grade | 44 | 3.71 | 0.804 | Intergroup | 7.417 | 5 | 1.483 | | |
| 4. Grade | 86 | 3.80 | 0.629 | In-Group | 212.208 | 501 | 0.424 | 3.502 | 0.004 |
| 5. Grade | 155 | 3.62 | 0.637 | Total | 219.625 | 506 | 1.907 | | |
| 6. Grade | 96 | 3.52 | 0.612 | | | | | | |
| 7. Grade | 55 | 3.48 | 0.727 | | | | | | |
| 8. Grade | 71 | 3.43 | 0.587 | | | | | | |
| Total | 507 | 3.60 | 0.659 | | | | | | |

p<0.05

Gifted students' self-efficacy levels showed statistically significant results for their class levels (p>0.05). According to the BonferroniPost Hoc Test result which is one of the multivariate comparisons tests to identify this difference, there was an only a significant difference between the 4th grades and 8th grades. When the gifted students' average scores for these two grades were considered, the highest self-efficacy score was for the 4th grade (3.80) and the lowest self-efficacy score was for the 8th grade (3.43). It was seen that gifted students' Self-Efficacy Scale for Children level average was 3.60 for class levels.

**Table 14.** Comparison of Gifted Self-Efficacy Scale for Children Mean Scores for SAC Term

| Classes | n | $\overline{X}$ | Sd | Variance Source | Sum of Squares | Sd | Mean Square | F | p |
|---|---|---|---|---|---|---|---|---|---|
| Support | 110 | 3.72 | 0.741 | Intergroup | 3.921 | 3 | 1.307 | | |
| ISD | 269 | 3.58 | 0.640 | In-Group | 215.704 | 503 | 0.429 | 3.048 | 0.028 |
| SSD | 78 | 3.60 | 0.628 | Total | 219.625 | 506 | 1.736 | | |
| Project | 50 | 3.39 | 0.566 | | | | | | |
| Total | 507 | 3.60 | 0.659 | | | | | | |

p<0.05

Gifted students' self-efficacy levels showed no statistically significant results for their SAC terms (p>0.05). According to BonferroniPost Hoc Test results, this difference was only significant between students in support term and students in project term. The reason for gifted students' low self-efficacy level in project

term than other groups might be due to application to various project contests in this period which led to high self-efficacy.

**Table 15.** Comparison of Gifted Students' Self-Efficacy Scale Mean Scores for Number of Siblings

| Classes | n | $\bar{X}$ | Sd | Variance Source | Sum of Squares | Sd | Mean Square | F | p |
|---|---|---|---|---|---|---|---|---|---|
| Only Child | 85 | 3.73 | 0.732 | Intergroup | 4.327 | 4 | 1.082 | | |
| 2 Siblings | 263 | 3.59 | 0.638 | In-Group | 215.298 | 502 | 0.429 | 2.522 | 0.040 |
| 3 Siblings | 114 | 3.50 | 0.602 | Total | 219.625 | 506 | 1.511 | | |
| 4 Siblings | 29 | 3.48 | 0.600 | | | | | | |
| 5 or Higher | 16 | 3.77 | 0.910 | | | | | | |
| Total | 507 | 3.60 | 0.659 | | | | | | |

p<0.05

Gifted students' perfectionism levels showed no statistically significant results for their number of siblings (p>0.05). It was found that gifted students with 5 or more siblings and only child gifted students had higher self-efficacy levels than gifted students in other groups. According to One-Way Variance Analysis (ANOVA) to determine which sub-groups differentiated for the number of siblings variable and Post-Hoc BonferroniTest results, there was a statistically significant difference for only child gifted students and all other gifted student groups.

**Table 16.** Comparison of Gifted Students' Self-Efficacy Scale Mean Scores for Sibling Rank

| Classes | n | $\bar{X}$ | Sd | Variance Source | Sum of Squares | Sd | Mean Square | F | p |
|---|---|---|---|---|---|---|---|---|---|
| First place | 321 | 3.64 | 0.674 | Intergroup | 5.715 | 5 | 1.143 | | |
| Second | 112 | 3.47 | 0.577 | In-Group | 213.910 | 501 | 0.427 | 2.677 | 0.021 |
| Third | 48 | 3.63 | 0.650 | Total | 219.625 | 506 | 1.570 | | |
| Fourth | 13 | 3.47 | 0.556 | | | | | | |
| 5 and Above | 5 | 4.10 | 0.773 | | | | | | |
| Twins | 8 | 3.14 | 0.899 | | | | | | |
| Total | 507 | 3.60 | 0.659 | | | | | | |

p<0.05

Gifted students' perfectionism levels showed statistically significant results for their sibling rank (p>0.05). It was seen that the self-efficacy level of gifted students that rank 5 or higher among the siblings or twins was similar and considerably lower than the gifted students in other groups. According to One-Way Variance Analysis (ANOVA) to determine which sub-groups differentiated for the sibling rank variable and Post-Hoc BonferroniTest results, there was a statistically significant difference between gifted students with the 1st rank and gifted students with the 5th or higher rank and twins. The lower self-efficacy level of gifted students with the 5th or higher rank and twins compared to gifted students in other groups might be due to comparing everything they do.

The Pearson Correlation analysis results between gifted students' Child and Adolescence Perfectionism Scale and Self-Efficacy Scale for Children are given in Table 17.

**Table 17.** The Pearson Correlation analysis results between gifted students' Child and Adolescence Perfectionism Scale and Self-Efficacy Scale for Children

| Scales | n | X | Sd | 1 | 2 | p |
|---|---|---|---|---|---|---|
| Child and Adolescence Perfectionism Scale | 507 | 3.58 | 0.775 | - | 0.024 | 0.585** |
| Self-Efficacy Scale for Children | 507 | 3.60 | 0.659 | 0.024 | - | |

*. Correlation is significant at 0.01 level (2-tailed).

**p>0.05

According to Pearson Correlation Analysis results, it was found that there was no significant and positive relationship between gifted students' answers to Child and Adolescence Perfectionism Scale and Self-Efficacy Scale for Children (r=0,024; p>0.001).

Although the scores of gifted students on the Child and Adolescent Perfectionism Scale and the scores they got from the answers to the Self-Efficacy Scale for Children are at moderate and good levels, there may not be a significant and positive relationship between these two situations. This can be explained as not every self-confident student is a perfectionist. In some cases, especially gifted students may not want to do a job perfectly even though they have self-confidence. This can be seen as a matter of preference or individual differences for such children.

## Conclusion, Discussion and Suggestions

While the child and adolescent perfectionism levels of gifted students did not differ significantly according to gender and the period they studied at SAC, they differed significantly according to the type of school they studied, grade level, number of siblings and rank among siblings. While the child and adolescent perfectionism self-efficacy levels of gifted students did not differ significantly according to gender, the type of school they studied, they differed significantly according to the period they studied at SAC, grade level, number of siblings and rank among siblings. As a result of the correlation analysis, it was concluded that there was no significant and positive relationship between the answers given by gifted students to the child and adolescent perfectionism scale and the answers given to the self-efficacy scale for children. When the perfectionism levels of gifted students were examined by gender variable, it was found that the perfectionism levels of gifted female students were higher than gifted male students. In the studies in which Kahraman (2013) and Tamul (2019) examined the perfectionism levels of gifted students according to the gender variable, the fact that female students' perfectionism levels were higher than male students supports the result of the research. In the study conducted by Yilmaz Celik (2013), it was determined that female students' perfectionism scores in the order sub-dimension were higher than the perfectionism scores of the order sub-dimension of male students, which supports the result of the study.The reason behind the girls' level of perfectionism being higher may result from the social roles attributed to girls, such as being tidy, being self-sacrificing for their family when necessary, and constantly maintaining balance at home (Aslan & Cansever, 2007). Different results have been obtained in some studies on this subject. In the studies conducted by Ogurlu et al., (2015), Kacmaz, (2019), no significant difference was found in the perfectionism levels of the gifted according to the gender variable. According to the results of the research conducted by MisirliTasdemir (2003), the perfectionism attitudes of gifted male students were found to be higher than the perfectionism attitudes of female students. In the study conducted by Leana-Tascilar et al., (2014), the scores of the social-induced perfectionism sub-dimension of the male students were higher than the social-induced perfectionism sub-dimension scores of the female students.

When the perfectionism levels of gifted students were examined according to the variable of the type of school the students attended, it was found that the perfectionism levels of the students studying in private schools were higher than the perfectionism levels of the students studying in the public school. In the research of Inci (2014), which examined the general scores of gifted students according to the school type variable, the fact that the general scores of gifted students studying at private school were higher than the general scores of gifted students studying at public school supports the result of the study. In the study where (Yenikaynak & Anafarta Sendag, 2014) examined the positive perfectionism scores according to the school type, the positive perfectionism scores of the students studying at private school were higher than the positive perfectionism scores of the students studying at the public school supports the result of the study. The reason behind the high perfectionism level of the students studying in private school is because the parents send their children to private schools with a special purpose due to the physical, social, academic,

and foreign language opportunities provided in the school and the society believes that students studying at private schools are more successful in exams and their academic success is higher (Bozyigit, 2017; Unsal & Cetin, 2019). It has been observed that some of the researches in the field have reached different results. Leana-Tascilar et al. (2014) examined the social-induced perfectionism sub-dimension scores of gifted students according to the school type variable, and the social-induced perfectionism scores of the students attending public school were found to be higher than the social-induced perfectionism scores of the students attending private school. In the study of Yildiz (2020), which examined the positive and negative perfectionism levels of students according to the school type variable, no differentiation was found in the positive and negative perfectionism levels of the students according to the school type.

When the perfectionism levels of the gifted students were examined according to the grade level variable of the students, it was found that the perfectionism levels of the gifted students in the 6th grade were higher than the perfectionism levels of the gifted students in the 3rd, 5th and 8th grade. In the research conducted by Parker & Mills (1996) in which they examined the perfectionism levels of 600 gifted students with similar socio-economic levels and 418 6th grade students with normal development, they found that gifted 6th-grade students displayed a higher level of perfectionism, supports the result. The fact that Altun (2010) found that 6th-grade students showed more tendencies in both positive perfectionism and negative perfectionism characteristics compared to 8th grade students in her research, which examined the positive and negative perfectionism characteristics according to the class level, parallel to the result of the study. In her study, Kahraman (2013) examined both positive perfectionism and negative perfectionism levels according to the class level variable, and found that the positive perfectionism level increased as the class level decreased, and the negative perfectionism level increased as the class level increased. In the research of Bencik (2006), which examined the general perfectionism levels of gifted students according to the class level variable, no significant difference was found in the perfectionism levels of gifted students according to the grade level. In the study of Yaoar (2008), which examined the age and grade levels of university students according to the perfectionism variable, it was concluded that age and grade level did not affect the perfectionism levels of the students.

When the perfectionism levels of the gifted students were examined according to the periods they studied at SAC, no differentiation was found in the perfectionism levels of the gifted students compared to the periods they studied at SAC. When the perfectionism levels of gifted students were examined in terms of the number of siblings of the students, it was found that the perfectionism levels of the gifted students, who were the only children in the family, were higher than the perfectionism levels of the gifted students who had siblings. In the study of Misirli Tasdemir (2003), which examined the variable of the number of siblings on the perfectionism levels of gifted children, it was found that the perfectionist tendencies of gifted children with four siblings were higher than the perfectionist tendencies of gifted children who were only one child. In the study of Koroglu (2008) examining the relationship between the perfectionism characteristics of high school students and the number of siblings, no differentiation was found between the perfectionism level and the number of siblings. In Bozdemir's (2011) research, which examines the perfectionist characteristics of adolescents in terms of various variables, no difference was found between order, excessive interest in mistakes, suspicion of behavior, family expectations, familial criticism, and personal standards subscale scores and perfectionism. In low-income families with a high number of children, the number of siblings the child has affects the effective and efficient study studies of the children. In low-income families with a high number of children, the number of siblings the child has affects the effective and efficient studies of the children. Because of the large number of children, there are fewer chances to spend on notebooks, pencils, books, crayons, dictionaries, and in short on the education of a single child (Calikoglu, 2009).

When the perfectionism levels of gifted students were examined according to the ranking variable of students between siblings, it was found that the perfectionism levels of gifted students who were twin children were lower than the perfectionism levels of the other rank students. Siegle & Schuler (2000) demonstrates the perfectionism characteristics of gifted students at the secondary school level; in his research, which he examined according to grade levels, gender, and order of birth, it was found that first-born adolescents were highly affected by parental criticism and expectations, and the youngest adolescents showed the least anxiety in these areas. In the study of Karayigit (2017) with university students, no significant difference was found between the positive perfectionism levels of university students according to their birth order. According to Hollender (1965), she mentions that sibling rivalry can breed or nurture the development of perfectionism. She states that the first children usually spend time with their families, take their families as role models and compare themselves with the achievements of adults. Not only do early children strive to perform perfectly, they can also be a harmonious child. As time passes, the need to please parents becomes internal and parental attitudes and needs become part of the ego ideal (Hollender, 1965). In the perfectionist children showing perfectionist features; sibling ranking, perfectionist parents, desire to be better than their peers, teachers are also effective (Orange, 1997).

When the self-efficacy levels of gifted students were examined by gender variable, no difference was found between the self-efficacy levels of gifted female students and the self-efficacy levels of gifted male students. In the study in which Kacmaz & Yildiz Demirtas (2020) examined the level of self-regulated learning and self-efficacy to predict harmonious perfectionism in gifted students, no difference was found between the self-efficacy levels of especially talented female and male students, and this situation supports the result of the study. In the study conducted by Cikrikci (2012) to determine the differences in self-efficacy perceptions of gifted students according to gender, no significant difference was found between male and female students' self-efficacy perceptions, and this situation supports the result of the study. In the study in which Yenice's (2012) science, social studies, and classroom teacher candidates' self-efficacy levels and problem-solving skills were examined in terms of various variables, the result that the self-efficacy levels of teacher candidates did not differ significantly according to the gender variable is in line with the result of the study. In the study of Ozturk & Kurtulus (2017), which examined students 'perception of mathematics self-efficacy according to gender variable, students' perceptions of mathematics self-efficacy did not show a statistically significant difference according to gender. Self-efficacy, which is formed according to the past experiences of individuals and is a belief that motivates the individual for their future behaviors, the more success the individual's past experiences are, the more motivated they will be for their future behaviors. The higher the self-efficacy level of the individuals who successfully perform the tasks and responsibilities assigned to them, the lower the self-efficacy levels of the individuals who cannot successfully fulfill these duties and responsibilities (Altun, 2010).

When the self-efficacy levels of gifted students were examined according to the variable of the type of school the students attended, there was no difference between the self-efficacy levels of the students studying at the public school and the self-efficacy levels of the students studying at the private school. In Yenice's (2012) study, in which science, social studies and classroom teacher candidates' self-efficacy levels and problem solving skills were examined in terms of various variables, the result that pre-service teachers' self-efficacy levels do not differ significantly according to the variable of the department they study is in parallel with the result of the study. Ozkan et al. (2018) examined the conscious awareness-based self-efficacy levels of primary school students in terms of various variables, and the students' conscious awareness-based self-efficacy scores were examined according to the school type variable, and there was a statistically significant difference between the students studying at private school and those studying at public school. It was determined that there was no difference, which supports the result of the research. In the study of Cagatay (2020), which examined the problem-solving skills of elementary school students

according to various variables, the conclusion that the self-efficacy of students studying at private school and public school did not have any effect on problem-solving skills supports the result of the study.

When the self-efficacy levels of gifted students were examined according to the grade level variable of the students, it was found that 4th-grade students had the highest self-efficacy level and 8th-grade students had the lowest self-efficacy level. In the research of Kacmaz (2019) which examined the class levels in self-efficacy scores, a significant difference was found in self-efficacy scores according to grade levels, and this difference was found to be statistically significantly lower in the self-efficacy scores of the 6th-grade students than the 4th and 5th grade students. Lloyd et al. (2005) found a significant difference according to the grade level according to the results of the study in which they examined the relationship between mathematics achievements and gender according to various variables. Accordingly, 4th grade students have higher proficiency than 7th grade students. In other words, as the grade level increases, academic self-efficacy decreases. In the study in which Yenice's (2012) science, social studies, and classroom teacher candidates' self-efficacy levels and problem-solving skills were examined in terms of various variables, it was concluded that the self-efficacy levels of pre-service teachers did not differ significantly according to the grade level variable. In the study conducted by Ozturk & Kurtulus (2017) to determine whether students 'perception of mathematics self-efficacy differs according to the class variable, the grade level variable of students' perceptions of mathematics self-efficacy showed a statistically significant difference, and this difference showed a difference in favor of the fifth and sixth graders.

When the self-efficacy levels of gifted students were examined according to the semesters they studied at SAC, it was found that the self-efficacy levels of gifted students in the project period were lower than the self-efficacy levels of gifted students in other groups. When the self-efficacy levels of gifted students are analyzed according to the number of siblings variable, the self-efficacy levels of gifted students who have 5 or more siblings in the family and gifted students who are only one child gifted students with other numbers of siblings were found to have higher self-efficacy levels Polat et al. (2015) examined the alienation from school and academic self-efficacy of teacher candidates, and it was determined that teacher candidates' level of alienation from school increased with the increase in the number of siblings they have in their families. In Yilmaz et al. (2012)' s study where the self-efficacy levels of primary school students were examined according to various variables, the self-efficacy scores of those with 2 siblings were higher than those with 4 or more siblings, and those with 3 siblings than those with 5 or more siblings. Demir & Borekci (2021) examined the verbal expression self-efficacy perception level of middle school eighth-grade students according to various variables, and the verbal expression self-efficacy levels of the students did not differ according to the variables of the number of siblings. In the study of Taner (2019), which examined the self-love and self-efficacy of adults according to their childhood experiences and some variables, the analysis conducted to determine whether the scores of the adults' self-love and self-efficacy sub-dimensions differ according to the number of siblings of the participants there was no difference in self-love and self-efficacy scores.

When the self-efficacy levels of gifted students were examined according to the order between siblings, it was found that the self-efficacy levels of gifted students who were 5th and above and twins in the sibling rank were lower than the other gifted students. In the study in which Cakmak (2020) 's secondary school students' self-efficacy of learning with technology and studying self-efficacy were examined according to various variables, it was found that middle school students' self-efficacy for learning with technology and studying self-efficacy did not differ according to the birth order variable.

When the answers given by gifted students to the child and adolescent perfectionism scale and the self-efficacy scale for children were examined, no significant and positive relationship was found between the answers given by gifted students to these two scales.

Relationships between gifted students' general self-efficacy as well as their academic and social self-efficacy and life satisfaction can be examined. In this direction, necessary arrangements can be made in the academic and social lives of students. Studies on the factors that are effective in the development of perfectionism and self-efficacy may be suggested. Whether there is a teacher effect on the development of perfectionism and academic self-efficacy can be investigated.

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iojes
www.iojes.net

International Online Journal of Educational Sciences

ISSN: 1309-2707

# Investigating Correlates of Self-Esteem, Happiness, and Body Image in Turkish Secondary School Students*

*Research Article*

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**To cite this article:** Topkaya, N., & Sahin, E., & Gencoglu, C. (2021). Investigating correlates of self-esteem, happiness, and body image in Turkish secondary school students, *International Online Journal of Educational Sciences*, *13*(5), 1525-1538.

ARTICLE INFO

*Article History*:

Received: 04.05.2021

Available online: 21.09.2021

ABSTRACT

This cross-sectional study examined correlates of self-esteem, happiness, and body image in Turkish secondary school students. A convenience sample of 377 secondary school students completed measures related to self-esteem, happiness, and body image. Data were analyzed using descriptive statistics and multivariate analysis of variance. The results of this study suggested that a higher grade point average was positively associated with higher self-esteem among secondary school students. The findings also indicated that being older, having a large number of same sex and opposite-sex friends, a high level of self-confidence, participating in leisure time physical activities, and experiencing any stressful life events were also positively associated with higher levels of happiness. Lastly, the results revealed that being male, being older, having a large number of same sex and opposite-sex friends, having a girl/boyfriend, a higher grade point average, and a high level of self-confidence were associated with positive body image in Turkish secondary school students. These research findings may help to determine distinct and shared correlates of self-esteem, happiness, and body image that could aid in the development of evidence-based positive psychology intervention programs for secondary school students.



**Keywords:**
Secondary school students, self-esteem, happiness, body image, correlates, Turkey.

* Portions of very earlier drafts of this paper were presented in June 2015 at the International Conference on New Horizons in Education in Barcelona, Spain.

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DOI: https://doi.org/10.15345/iojes.2021.05.014

## Introduction

In recent years, positive youth development in schools has begun to receive major public interest around the world due to its positive effects on the social and emotional development of youth. While the emergence of positive psychology as a new movement emphasizing human virtues and strengths has led to a number of studies conducted to identify the personal and interpersonal protective factors in developed Western countries, relatively little research has been conducted to determine what personal and interpersonal protective factors are present in secondary school students in developing countries, such as Turkey.

Studies with secondary school students regarding self-esteem, happiness, and body image have been carried out primarily in Western industrialized countries, but there is an increasing recognition of the role of culture in the well-being of individuals (Diener, Oishi, & Tay, 2018). Although most Turkish individuals protect their collectivistic values, important cultural, economic, social, demographic, and technological changes over the years have led to a blend of traditional Turkish and Western ideas, norms, and behaviors (İmamoğlu, 2003; Kağıtçıbaşı, 2012; Mocan-Aydın, 2000), particularly those of the younger generation (Karakitapoğlu-Aygün & İmamoğlu, 2002). Thus, Turkey is a diverse country with a unique cultural context to investigate correlates of self-esteem, happiness, and body image in adolescents.

According to Anderson and Olnhausen (1999), adolescence is a critical period for the development of lifelong understandings, beliefs, and habits, and adolescents deal with developmental tasks, such as forming their identity, accepting changing physical characteristics, learning skills for a healthy lifestyle, leaving family, establishing values and moral norms, being an individual that contributes to society, and choosing a vocation. A number of stressors in early adolescents' personal, school, and home lives, such as possible conflicts with teachers and parents, as well as difficulties in keeping up with their rapidly changing bodies, may hamper the subjective well-being of early adolescents and endanger the successful fulfillment of key developmental tasks. Consequently, secondary school students may experience mental health difficulties. Evidence suggests that poor mental health in adolescence may lead to undesirable consequences, including intentional and unintentional self-injuries, juvenile delinquency, substance abuse, risky sexual behavior, school dropout, family dysfunction, and mental health difficulties in adulthood (Angold et al., 1998; Ellickson, Saner, & McGuigan, 1997; Glied & Pine, 2002; Merikangas et al., 2010). However, there is considerable evidence to support the argument that a number of protective factors may help those in early adolescence cope with these developmental tasks and stressors.

One important variable that may help secondary school students to cope with developmental tasks and life stressors is self-esteem. Self-esteem relates to one's positive or negative attitude toward oneself (Rosenberg, 1965). Previous research has shown that people with higher self-esteem tend to be more extroverted, optimistic, and emotionally stable, have more effective coping strategies (e.g., problem-focused, active-coping), and receive more social support from their families and friends (Zeigler-Hill, 2013). Individuals with high self-esteem are also less likely to experience certain psychological disorders, such as eating disorders and depression (Zeigler-Hill, 2011). Thus, having high self-esteem is an important factor for secondary school students to protect their mental health during adolescence.

Another important psychological variable that may help secondary school students deal with developmental tasks and life stressors is happiness. Happiness has been defined as individuals' positive emotional and cognitive evaluations of their lives and includes three components: general life satisfaction, the presence of positive emotions, and absence of negative emotions (van Workum, Scholte, Cillessen, Lodder, & Giletta, 2013). Subjective well-being, life satisfaction, and happiness have frequently been used interchangeably in the literature (Diener, Oishi, & Lucas, 2003; Seligman, 2002). However, while general life satisfaction refers to the cognitive dimension of subjective well-being, the presence of positive emotions and absence of negative emotions refer to the emotional dimension. Therefore, a happy adolescent experiences

positive emotions more than negative emotions and generally evaluates her/his life positively. Prior research has indicated that happiness is negatively associated with negative mental health indicators, such as depression, suicidal thoughts, and alcohol and drug use (Kaczmarek, Bączkowski, Enko, Baran, & Theuns, 2014; Kim, Kim, Seo, Lee, & Cho, 2014; Lambert et al., 2014). Moreover, happy individuals are more likely to be extroverts and experience less anxiety. Happy individuals are also more successful in their marriages and friendships than their less happy counterparts (Hayes & Joseph, 2003; Lyubomirsky, King, & Diener, 2005).

Having a positive body image may also help adolescents to deal with developmental tasks and stressors. Body image has been defined as a subjective mental picture created by an individual about her/his physical appearance through the observations and reactions of others (Grogan, 2008). Previous research conducted with adolescents with body image dissatisfaction revealed that those adolescents who perceive their health as bad are more likely to show depression indicators, such as low self-worth (Field, 2004). Furthermore, negative body image is related to eating disorders in adolescents (Smolak, 2004). Prior studies have also shown that sociocultural, biological, and interpersonal factors may affect body image dissatisfaction in adolescence. For instance, Mäkinen, Puukko-Viertomies, Lindberg, Siimes, and Aalberg (2012) noted that body mass index and eating habits are associated with one's body image in transition from early to mid-adolescence. It was also found that males' self-esteem and body image satisfaction are higher than those of females, and individuals with abnormal eating habits have lower body image satisfaction compared to individuals with normal eating habits.

Many previous studies have investigated the correlates and determinants of self-esteem, happiness and body image in adolescence. For instance, Cheng and Furnham (2003) examined the relationships among personality characteristics, self-esteem, demographic factors, happiness, and depression among individuals in late-adolescence. The results revealed that females were more likely to have neurotic tendencies and depressive symptoms, whereas males had higher psychotic tendencies. They also found that females evaluated their friendships more positively than males. Although no significant differences were found in terms of self-esteem levels, positive and negative affect, and happiness scores between females and males, self-esteem and happiness were found to be positively related to extroversion, as well as family, friends, and romantic relationship ratings for both females and males. A study by Işıklar (2012) also revealed that self-esteem was positively associated with physical, mental, social, and environmental quality of life, and self-esteem did not differ according to gender.

The majority of adolescents assess their subjective well-being as positive, though a considerable number of adolescents perceive themselves as unhappy (Huebner, Drane, & Valois, 2000). Abdel-Khalek (2006) reported that male students attending secondary schools were happier than females. A recent study by Lambert and colleagues (2014) also revealed that happiness was positively associated with good connections with family, friends, and school, regular physical exercise, and eating meals with one's family. Sezer (2011) also found that adolescents who engage in regular physical activities are more likely to have higher subjective well-being than physically inactive adolescents.

Although the aforementioned studies examined the variables that may affect self-esteem, happiness, and body image, they all included limited sociodemographic variables. Moreover, self-esteem, body image, and happiness are associated with cultural norms, beliefs, and values. However, there are few studies examining these factors in developing countries such as Turkey. Given the lack of research, there is a need for evidence about how these findings can be generalized to developing countries such as Turkey. Thus, this study was designed to investigate the correlates of self-esteem, happiness, and body image in Turkish secondary school students.

## Method

### Research Design

A cross-sectional research design was used to examine correlates of self-esteem, happiness, and body image in Turkish secondary school students. This research design allows researchers to examine differences among variables of interest and examine temporal relationships between study variables within a certain time period (Howitt & Cramer, 2014).

### Participants

The participants included 377 students attending five secondary schools in a province located in the central Black Sea region of Turkey. These schools were selected using the convenience sampling method (Howitt & Cramer, 2014). Of these students, 53% ($n$ = 199) were female and 47% ($n$ = 178) were male. Their ages ranged from 12 to 14 years old, and the mean age was 13.11 ($SD$ = .65).

### Measures

***Sociodemographics.*** Students were asked to provide information about their school, sex, age, and grade level. The number of same-sex and opposite-sex friends was measured by asking students: "How many same-sex/opposite-sex close friends do you have?" In order to obtain information about whether those in early adolescence had a girl/boyfriend, participants were asked to answer *Yes* or *No* to the following question: "Do you have a girl/boyfriend?" Similarly, attending leisure time physical activities was measured with the question "Do you participate in any leisure time physical activities?" Participants also answered this question by indicating *Yes* or *No*. Previous year academic achievement was measured by asking students the following question: "What was your grade point average (GPA) for the previous school year?" Participants reported their previous year GPA on a five-point scale. Self-confidence was evaluated by asking students to complete the following statement: "I am a person who has ..... self-confidence." Students indicted their answer by choosing either *High* or *Low*. The number of stressful life events was identified by asking the following question: "How many life events (e.g., death of a close family member, changing schools, death of a close friend, change in the health of a family member, divorce between parents, change in residence) have you experienced in the last 12 months that negatively affected your life?" Students reported their answer on an eight-point scale ranging from *None* to *Seven or more*.

***Self-esteem.*** Dispositional self-esteem was assessed with the Rosenberg Self-Esteem Scale (RSES) (Çuhadaroğlu, 1986; Rosenberg, 1965), which is designed to measure how respondents generally feel about themselves. The RSES consists of 10 items. Each item describes specific statements related to self-worth and self-respect (e.g., "On the whole, I am satisfied with myself." and "I wish I could have more respect for myself."). Respondents indicate their degree of agreement for each item on a four-point Likert-type scale ranging from *Strongly Disagree* (1) to *Strongly Agree* (4). Five items were formulated positively and five items negatively. Possible scores can range from 10 to 40. Higher scores indicate greater self-esteem. The coefficient alpha internal consistency reliability for the RSES calculated in this study was .79.

***Happiness.*** A single-item happiness scale was used to assess dispositional happiness level. This type of scale has been used frequently in large-scale international studies (Lyubomirsky et al., 2005). Participants were asked to answer the following question: "Taken your life as a whole, how would you rate your happiness?" Participants report their happiness levels on a 10-point Likert-type scale ranging from 1 (very unhappy) to 10 (very happy). In addition to substantial evidence for single-item happiness scale content and face validity, numerous studies have provided strong evidence for its convergent and divergent validity such that single-item happiness scores positively correlated with self-rated health, self-confidence, and body image scores and were negatively associated with depression, anxiety, and stress scores (Abdel-Khalek, 2006; Şahin, Topkaya,

& Barut, 2016; Şahin, Topkaya, & Ersanlı, 2016). Possible scores on this scale can range from 1 to 10, with higher scores indicating a higher level of happiness.

***Body image.*** A single-item body image satisfaction scale was developed by the researchers to evaluate students' body image. In the development of this scale, Marsh's (1993) single-item body image question was used. For this question, the translation and back-translation procedures suggested by Brislin (1980) were employed. Specifically, students were asked to answer the following question: "After evaluating all aspects of your physical appearance, how would you rate your satisfaction?" Participants rate their body image satisfaction on a 10-point Likert-type scale ranging from Very dissatisfied (1) to Very satisfied (10). Possible scores can range 1 to 10, and higher scores indicate greater body image satisfaction. In addition to face and content validity of single-item body image satisfaction scales, studies examining the psychometric properties of this type of scale also provided support for its convergent and discriminant validity by reporting that single-item body image satisfaction scores positively related to happiness scores and were negatively associated with depression, anxiety, and stress scores (Şahin, Topkaya, & Barut, 2016; Şahin, Topkaya, & Ersanlı, 2016).

**Procedure**

Before the administration of the data collection instruments, students provided written informed consent for the study and were informed about the purpose of the investigation and expected outcomes. Students were told that participation in the study was voluntary, the responses would be kept confidential, data would not be used for any purposes other than research, and they could withdraw during or after completion of the research instrument without any consequences. All students participated voluntarily. The administration of measures lasted approximately 15 minutes.

**Statistical Analyses**

All statistical analyses were performed using SPSS 23 software. Preliminary data analyses were used to check the data before performing the main statistical analysis. In order to facilitate and perform statistical analysis, same-sex friend number, opposite-sex friend number, GPA, and stressful life events were recategorized after examining frequency distributions. No univariate or multivariate outliers were detected (Tabachnick & Fidell, 2012). The normality assumption was assessed using skewness and kurtosis values along with graphical approaches taking into account sample size, and it was found that the data were approximately normally distributed (Tabachnick & Fidell, 2012).

Descriptive statistics were employed to obtain information about the study participants. Multivariate analysis of variance (MANOVA) was used to simultaneously examine differences between study variables with respect to self-esteem, happiness, and body image scores. MANOVA has two additional assumptions, homogeneity of covariance matrices and homogeneity of variances. These assumptions were examined using guidelines suggested by Ho (2013). Since the homogeneity of covariance matrices and/or homogeneity of variance assumption were violated in some of the analyses, Pillai's Trace test was used to report the multivariate main effect as suggested by Tabachnick and Fidell (2012). Follow-up one-way analysis of variances (ANOVAs) were employed to examine each univariate main effect. The Post hoc Tukey HSD or Games-Howell (in the case of the violation of the homogeneity of variance assumption) test was used to determine the difference between groups when there were more than two groups. An alpha criterion of 0.05 was used in the multivariate significance tests. Since three dependent variables were employed in the MANOVA analyses, each univariate main effect and subsequent analyses were also tested using the Bonferroni adjustment with a significance level of $p = 0.017$ (.05/3) as suggested by Tabachnick and Fidell (2012). The data that support the findings of this study are available from Open Science Framework (osf.io/svmbh).

## Results

### Descriptive Statistics

Table 1 reports the frequencies and percentages in terms of the sociodemographic characteristics of the participants. As seen in Table 1, 52.8% (*n*=198) were female, 56.2% (*n* = 212) were 13 years old, 19.9% (*n* = 75) had three to five same-sex friends, and 44.8% (*n* = 168) had two or fewer opposite-sex friends. Additionally, of these early adolescents, 49.6% (*n* = 187) were attending leisure time physical activities, and 39.3% (*n* = 187) had a GPA between 70 and 84. The percentage of early adolescents with low self-confidence was 13.3% (*n* = 50), and 25.2% (*n* = 95) had experienced a stressful life event in the last 12 months.

**Table 1.** Sociodemographic characteristics of the study sample

| | ***n*** | **%** |
|---|---|---|
| **Sex** | | |
| Girl | 199 | 52.8 |
| Boy | 178 | 47.2 |
| **Age** | | |
| 12 | 62 | 16.5 |
| 13 | 212 | 56.2 |
| 14 | 103 | 27.3 |
| **Same-sex friend number** | | |
| 2 or fewer | 75 | 19.9 |
| 3–5 friends | 75 | 19.9 |
| 6 or more | 227 | 60.2 |
| **Opposite-sex friend number** | | |
| 2 or fewer | 168 | 44.8 |
| 3–5 friends | 58 | 15.4 |
| 6 or more | 150 | 39.8 |
| **Girl/Boyfriend** | | |
| Yes | 82 | 21.8 |
| No | 295 | 78.2 |
| **Leisure Time Physical Activities** | | |
| Yes | 187 | 49.6 |
| No | 190 | 50.4 |
| **GPA** | | |
| 69 points or below | 64 | 17 |
| 70–84 | 148 | 39.3 |
| 85 or above | 165 | 43.8 |
| **Self-confidence** | | |
| High | 327 | 86.7 |
| Low | 50 | 13.3 |
| **Stressful Life Events** | | |
| None | 150 | 39.8 |
| 1 | 95 | 25.2 |
| 2 or more | 132 | 35 |

*Note: n*= 377.

### Results of one-way MANOVAs

A series of MANOVAs was conducted to examine possible mean differences between self-esteem, happiness, and body image with respect to the study variables. The means and standard deviations of the study variables are reported in Table 2, and the multivariate main effects of the study variables are reported

in Table 3. As seen in Table 3, one-way MANOVA results showed that all multivariate main effects of the study variables were significant. The effect sizes for the multivariate main effects for the study variables ranged from small to large.

**Table 2.** Descriptive statistics of self-esteem, happiness, and body image

| Variable | Self-esteem | | Happiness | | Body Image | |
|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *M* | *SD* |
| **Sex** | | | | | | |
| Girl | 31.08 | 5.42 | 8.26 | 1.93 | $7.32_b$ | 1.94 |
| Boy | 30.99 | 5.62 | 8.64 | 1.47 | $7.92_a$ | 1.79 |
| **Age** | | | | | | |
| 12 | 30.27 | 5.20 | $7.42_b$ | 2.63 | $6.97_b$ | 2.32 |
| 13 | 31.37 | 5.50 | $8.58_a$ | 1.38 | $7.87_a$ | 1.72 |
| 14 | 30.81 | 5.70 | $8.78_a$ | 1.51 | 7.45 | 1.86 |
| **Same-sex friend number** | | | | | | |
| 2 or fewer | 31.00 | 5.26 | $6.65_b$ | 2.29 | $6.04_b$ | 2.10 |
| 3–5 friends | 31.39 | 5.49 | $8.67_a$ | 1.84 | $8.03_a$ | 1.40 |
| 6 or more | 30.93 | 5.61 | $8.96_a$ | .92 | $7.98_a$ | 1.69 |
| **Opposite-sex friend number** | | | | | | |
| 2 or fewer | 31.21 | 5.41 | $8.07_b$ | 2.12 | $7.16_b$ | 2.08 |
| 3–5 friends | 31.29 | 5.59 | 8.31 | 1.88 | $7.38_b$ | 1.78 |
| 6 or more | 30.74 | 5.61 | $8.91_a$ | .90 | $8.19_a$ | 1.53 |
| **Girl/Boyfriend** | | | | | | |
| Yes | 31.78 | 5.55 | 8.13 | 2.08 | $8.15_a$ | 1.67 |
| No | 30.83 | 5.49 | 8.53 | 1.62 | $7.45_b$ | 1.92 |
| **Leisure Time Physical Activities** | | | | | | |
| Yes | 31.04 | 5.56 | $8.92_a$ | .97 | 7.63 | 1.75 |
| No | 31.03 | 5.47 | $7.97_b$ | 2.15 | 7.58 | 2.02 |
| **GPA** | | | | | | |
| 69 points or below | $29.23_b$ | 5.29 | 8.20 | 2.04 | $6.44_b$ | 1.77 |
| 70–84 | 31.03 | 5.66 | 8.49 | 1.62 | $7.63_a$ | 1.90 |
| 85 or above | $31.74_a$ | 5.31 | 8.48 | 1.72 | $8.04_a$ | 1.75 |
| **Self-confidence** | | | | | | |
| High | 31.28 | 5.45 | $8.66_a$ | 1.41 | $7.94_a$ | 1.67 |
| Low | 29.42 | 5.69 | $7.02_b$ | 2.76 | $5.44_b$ | 1.81 |
| **Stressful Life Events** | | | | | | |
| None | 31.11 | 5.25 | $8.76_a$ | 1.54 | 7.56 | 1.84 |
| 1 | 30.31 | 5.42 | 8.43 | 1.55 | 7.59 | 2.74 |
| 2 or more | 31.48 | 5.83 | $8.08_b$ | 2.00 | 7.67 | 2.06 |

*Note*: Each number with a subscript in the means indicates a group difference: a > b. There was no difference in the other groups.

A series of one-way ANOVAs on self-esteem, happiness, and body image variables was conducted as a follow-up test to the MANOVA for the study variables, and the results are reported in Table 4. The results of the one-way ANOVAs suggested that girls in early adolescence had significantly lower body image scores than early adolescent boys. The effect size for body image was low. One-way ANOVA results for age also suggested that 12-year-old adolescents had significantly lower happiness and body image scores than those who were 13 years old. Moreover, 12-year-old adolescents were less happy than those who were 14 years old. The effect size for happiness was medium, and the effect size for body image was low for the age variable.

**Table 3.** One-way MANOVA multivariate main effect statistics

| *Variable* | *Pillai's Trace* | $df_n$, $df_d$ | *F* | *p* | *Partial* $\eta^2$ |
|---|---|---|---|---|---|
| Sex | .027 | 3, 373 | 3.48 | .016* | .027 |
| Age | .094 | 6, 746 | 6.12 | .001*** | .047 |
| Same-sex friend number | .698 | 6, 746 | 22.22 | .001*** | .152 |
| Opposite-sex friend number | .085 | 6, 746 | 5.50 | .001*** | .042 |
| Having girl/boyfriend | .064 | 3, 373 | 8.49 | .001*** | .064 |
| Leisure time physical activities | .097 | 3, 373 | 13.40 | .001*** | .097 |
| GPA | .112 | 6, 746 | 7.39 | .001*** | .056 |
| Self-confidence | .214 | 3, 373 | 33.90 | .001*** | .097 |
| Stressful Life Events | .051 | 6, 746 | 3.27 | .003** | .026 |

*Note:* $p < .05$*, $p < .01$**, $p < .001$***.

**Table 4.** One-way ANOVA results

| *Variable* | $df_n$, $df_d$ | *F* | *p* | *Partial* $\eta^2$ |
|---|---|---|---|---|
| **Sex** | | | | |
| Self-esteem | 1, 375 | 0.20 | .887 | .000 |
| Happiness | 1, 375 | 4.52 | .034 | .012 |
| Body image | 1, 375 | 9.67 | .002** | .025 |
| **Age** | | | | |
| Self-esteem | 2, 374 | 1.08 | .341 | .006 |
| Happiness | 2, 374 | 14.22 | .001*** | .071 |
| Body image | 2, 374 | 6.09 | .002** | .032 |
| **Same-sex friend number** | | | | |
| Self-esteem | 2, 374 | .19 | .826 | .001 |
| Happiness | 2, 374 | 68.32 | .001*** | .264 |
| Body image | 2, 374 | 38.47 | .002** | .171 |
| **Opposite-sex friend number** | | | | |
| Self-esteem | 2, 374 | .37 | .694 | .002 |
| Happiness | 2, 374 | 10.13 | .001*** | .051 |
| Body image | 2, 374 | 13.16 | .001*** | .066 |
| **Having girl/boyfriend** | | | | |
| Self-esteem | 1, 375 | 1.19 | .167 | .005 |
| Happiness | 1, 375 | 3.27 | .071 | .009 |
| Body image | 1, 375 | 8.78 | .003** | .023 |
| **Leisure time physical activities** | | | | |
| Self-esteem | 1, 375 | 0.00 | .984 | .000 |
| Happiness | 1, 375 | 30.48 | .001*** | .078 |
| Body image | 1, 375 | 0.07 | .790 | .000 |
| **GPA** | | | | |
| Self-esteem | 2, 374 | 4.87 | .008** | .025 |
| Happiness | 2, 374 | .72 | .488 | .004 |
| Body image | 2, 374 | 18.00 | .001*** | .088 |
| **Self-confidence** | | | | |
| Self-esteem | 1, 375 | 5.03 | .026 | .013 |
| Happiness | 1, 375 | 42.81 | .001*** | .102 |
| Body image | 1, 375 | 94.33 | .001*** | .201 |
| **Stressful life events** | | | | |
| Self-esteem | 2, 374 | 1.29 | .277 | .007 |
| Happiness | 2, 374 | 5.45 | .005** | .028 |
| Body image | 2, 374 | .12 | .891 | .001 |

*Note:* Each univariate main effect was tested using the Bonferroni adjustment with a significance level of $p < .017$.*, $p < .01$**, $p < .001$***.

The study findings revealed that students who have two or fewer same-sex friends were significantly lower in happiness and body image scores than students who have three to five same-sex friends or students who have six or more same-sex friends. The effect size of happiness and body image were large for the number of same-sex friend. Similar to same-sex friend number, students who have two or fewer opposite-sex friends have significantly lower happiness and body image scores than students who have six or more friends. Students who have six or more opposite-sex friends also had significantly higher body image scores than students who have three to five opposite-sex friends. The effect size of happiness was small, and the effect size of body image was medium for opposite-sex friend number.

The findings also suggested that students who have a boy/girlfriend have higher body image scores than those who do not. The effect size of body image for having a boy/girlfriend was low. Students who participated in leisure time physical activities had also higher happiness scores than did those who did not. The effect size of happiness was medium. For GPA, the research findings revealed that students who have a GPA of 85 or above had significantly higher levels of self-esteem than those with a 69 or below. At the same time, students who have a GPA of 69 or below had significantly lower body image scores than students with a GPA of 85 or above or students with a GPA between 70–84. The effect size of self-esteem was low, and the effect size of body image was medium for GPA.

Research findings regarding self-confidence indicated that students who have high self-confidence have significantly higher levels of happiness and body image scores than students who have low self-confidence. The effect sizes of body image and happiness were large for self-confidence. Lastly, one-way ANOVA results related to stressful life events showed that students who experienced two or more stressful life events were less happy than students who had not experienced any stressful life events. The effect size of happiness was low for stressful life events.

## Discussion

This study investigated correlates of self-esteem, happiness, and body image in secondary school students. Study results demonstrated that girls in early adolescence have a significantly worse body image than their male counterparts. This is in line with previous research findings examining differences in body image among adolescents (Benjet & Hernandez-Guzman, 2001). For example, Benjet and Hernandez-Guzman (2001) found that after the start of menstruation, negative body image, externalizing problems, and depression increase in female adolescents. In early adolescence, significant growth spurts are seen in females (Set, Dağdeviren, & Aktürk, 2006). These include rapid physical changes, such as voice and facial, breast growth, the expansion of the hips, and first menarche. These changes can lead girls to develop more negative body images than males. The results of this study also indicated that being younger was positively associated with lower levels of happiness and negative body image. Such results are congruent with a Turkish research study indicating that 12-year-old Turkish adolescents have significantly poorer body images than older adolescents (Çok, 1990). Being a 12-year-old adolescent may be a risk factor for body image dissatisfaction in Turkish secondary school students.

Furthermore, this study found that adolescents who have more same-sex and opposite-sex friends have higher body image satisfaction and happiness levels than those adolescents who have fewer same-sex and opposite-sex friends. Moreover, adolescents who have a boy/girlfriend have more positive body images than those who have not. These results are in line with research findings showing that social relations are among the main factors leading to happiness. For instance, Uusitalo-Malmivaara (2011) found that very unhappy secondary school students want to have a peaceful family life, more money, and a better appearance when

compared to their happy counterparts. Similarly, Chui and Wong (2015) found that one's number of close friends was positively associated with happiness, whereas it was not connected with self-esteem.

These findings can be explained by different buffering and enhancing mechanisms in adolescents. First, when adolescents have more friends, they are more likely to be influenced by emotional states and feelings directly or indirectly related to their friends. So, when their friends become happy, by imitating their happiness, they may also affect their own happiness and that of other friends, and therefore, adolescents may feel happier (Hatfield, Cacioppo, & Rapson, 2002). Second, when adolescents have more friends, they may be affected by other friends' cognitive evaluations during their friendship and this may lead them to achieve similar levels of happiness (van Workum et al., 2013). Third, adolescents' friends may make them feel happier by providing emotional support to suppress negative emotions and help them deal more effectively with stress symptoms. Fourth, when adolescents share their positive experiences with their friends, they create new opportunities to increase their level of happiness. Consequently, the increase in the number of friends may also increase the opportunities to share positive experiences. Lastly, adolescents have some basic needs, such as feelings of acceptance, affection, intimacy, relatedness, and autonomy (Ryan & Deci, 2018). Peer relationships may offer a unique environment to meet these basic needs, which may lead them to feel happier. In terms of body image, adolescents may have more favorable cognitive assessments about themselves by having more same-sex and opposite-sex friends. Similarly, when those in early adolescence have a boy/girlfriend, they may assess themselves as more handsome/beautiful, which in turn may positively influence their body image.

It was also found in this study that the happiness levels of students who engaged in leisure time physical activities were significantly higher than those of students who did not. These results were in line with those of Lambert et al.'s (2014) study showing that happiness was related to doing regular sport activities. According to Argyle (2013), physical activity not only leads to the release of endorphin and dopamine hormones in the body, but it is also an effective tool to create happiness in people by offering social interactions and increasing opportunities for a sense of accomplishment and self-efficacy. This may also be valid for the Turkish adolescents who took part in our study. Adolescents who engage in leisure time physical activities may get opportunities, such as collaborating with other adolescents, establishing close relationships, and competing, that may increase their positive feelings, including happiness.

This study demonstrated that self-esteem and body image levels of students who are academically more successful were significantly higher than those of students with lower academic achievement. Students spend a large portion of their time at school, and possible success or failure in this setting can affect their relationships with their parents, friends, and teachers. Therefore, the academic life of adolescents has a significant effect on their self-perception. Studies investigating the relationship between self-esteem and academic achievement have shown that there is a low positive relationship ($r$=.10 and .30) between self-esteem and academic achievement. Similarly, Di Giunta et al. (2013) found that there was a low positive relationship between self-esteem and academic achievement in the past as well as academic achievement in the present for both females and males ($r$=.16 and .20, respectively). In terms of body image, in order to improve academic achievement, less successful adolescents may request help from academically successful same-sex or opposite-sex adolescents, and this may lead to more positive cognitive assessments of the academically successful adolescents' body image. It is also possible that adolescents who are academically successful in this sample may also have a positive body image. However, this interpretation requires additional empirical evidence.

The study results demonstrated that students who have high levels of self-confidence have significantly higher levels of happiness and more positive body images than students with low self-confidence. The concept of self-confidence is closely related to self-efficacy in psychology, which refers to beliefs about an individual's capacity to perform the behaviors required to achieve certain performance gains and related to an individual's

perception of their ability in different situations (Judge, Erez, & Bono, 1998). Individuals with high self-efficacy are expected to experience more positive emotional states and have more positive attitudes towards the self (Bandura, 1997).

Lastly, the results of this study showed that adolescents who experienced two or more stressful life events had significantly lower levels of happiness than adolescents who had experienced no stressful life events. These results are in line with Suldo and Huebner's (2004) study demonstrating that stressful life events are negatively correlated with subjective well-being among adolescents. Individuals experience stressful life events at least once during their lifetime, such as the death of a family member, and these stressful life events may lead to an increase in negative affectivity and the reduction of positive emotions, such as happiness.

There are some limitations to this study, which indicates that the results should be interpreted with caution. First, single-item scales were used to measure the level of happiness and body image of adolescents in this study. Although single-item scales are widely employed in psychology research and the construct, convergent, and discriminant validity evidence of the single-item scales was provided in previous studies, we still have limited information about the psychometric properties of these scales. Therefore, the use of multi-item scales for happiness and body image in future studies may be useful. Second, this research was carried out with a limited number of students in five different secondary schools in a small city located in the central Black Sea region of Turkey. For this reason, the external validity of this study is low because the experiences of secondary school students in an urban setting may not be able to be extended to secondary school students in more rural or remote settings or in metropolitan centers across Turkey. Therefore, a more representative sample of those in early adolescence may be useful in future studies. Third, a cross-sectional research design was utilized in this study. Although this design gives researchers opportunities to learn about the current status of the studied sample, cause and effect relationships cannot be established from the findings, but some information can be provided about possible risk factors or protective factors. Therefore, carrying out longitudinal studies might be useful with this kind of sample. Lastly, information from students was collected through self-report scales in this study. Such scales can cause a number of common method biases, such as mid-point responding and social desirability (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Thus, the assessment of these variables by receiving information from different sources of information (parents, close friends, teachers) might be also useful in the future studies.

In conclusion, the correlates of self-esteem, happiness, and body image were examined in this study. The results demonstrated that gender, friendships, academic achievement, sense of self-confidence, engaging in leisure time physical activities, and stressful life events were associated with self-esteem, happiness, or body image. Researchers who want to develop evidence-based positive psychology intervention programs for the development of self-esteem, happiness, and body image need to focus on gender-specific programs, as well as topics such as developing interpersonal relationships, increasing academic achievement, and participating in regular sport activities to increase the subjective well-being of secondary school students.

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International Online Journal of Educational Sciences

ISSN: 1309-2707

# The Impact of Cooperative Learning Activities in Turkish Courses on 21st Century Learning and Innovation Skills Development

*Research Article*

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**To cite this article:** Soysal, T., & Karatay, H. (2021). The impact of cooperative learning activities in Turkish courses on 21st century learning and innovation skills development, *International Online Journal of Educational Sciences*, *13*(5), 1539-1559.

ARTICLE INFO

*Article History*:

Received: 28.05.2021

Available online: 31.08.2021

ABSTRACT

This study aims to develop students' creativity, critical thinking, communication, and collaboration skills, which are included in 21st century learning and innovation skills, through cooperative learning activities in Turkish courses. Utilizing the embedded mixed methods, the study was managed with 66 students in the 6th grade from a secondary school in Bolu. In the quantitative dimension of the study, pre-test and post-test control group quasi-experimental design was used. Moreover, to incorporate the participants' views and perspectives into the experimental results, the qualitative data collected through observation, interview, and student diary were utilized. The pretests were administered in the fall of the academic years, 2018-2019, and then, a 13 week qualitative data collection procedure was followed. After completing the implementations, the participants were posttested. Accordingly, the study revealed that the Turkish courses implemented according to cooperative learning activities contributed to the students' collaboration, critical thinking, communication, and creativity skills development as well as all the dimensions related to these skills.



**Keywords:**
21st century skills, creativity, critical thinking, communication, cooperative learning

## Introduction

New job opportunities and approaches urge people to acquire some skills due to the science and technology advancements in the 21st century. In this context, "for many people, life in the 21st century has become international, multicultural and interconnected, new skills are needed to succeed in education and workplace" (Suto, 2013, pp. 2). "To overcome the challenges of the 21st century in science and technology sector, students need to be equipped with 21st century skills to ensure their competitiveness in the globalization

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DOI: https://doi.org/10.15345/iojes.2021.05.015

era" (Turiman, Omar, Daud & Osman, 2012, pp. 110). Today's individual is expected to attain not only academic achievements but also to be a fully equipped citizen of the 21st century. "In today's digital world, schools are expected to prepare students for the 21st century. Skills such as critical evaluation, problem-solving, collaborative working and online communication are required of 21st century learners" (Shields & Chugh, 2018, pp. 1101).

There are different frameworks (Assessment and Teaching of 21st Century Skills, Engauge, European Reference Framework, ICT Competency Standards, NAEP Technological Literacy Framework, National Educational Technology Standards, P21 etc.) categorizing 21st century skills in the knowledge-base. Sharing some common points, the frameworks vary in their viewpoints and focus. However, the framework P21 has been accepted widely in the knowledge base. Gelen (2017) states the project called "Partnership for 21st Century Learning (P21)", which is a strategic partnership project implemented in the 21 states and supported by 33 institutions in the US, is an excellent model proposing the curriculums and the instruction for 21st century skills. The 21st century skills framework developed by the P21 has been displayed below:

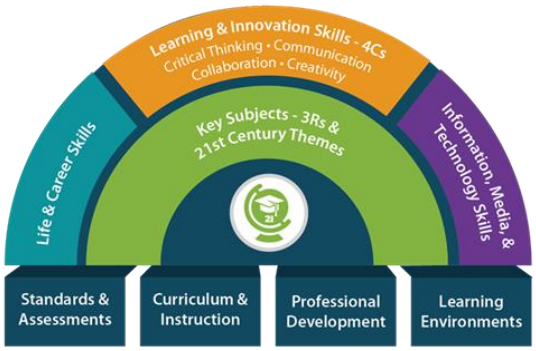


**Figure 1.1.** The P21 Framework for 21st Century Skills

(http://www.battelleforkids.org/networks/p21)

As it is shown in the figure above, the skills are grouped under the 3 main titles as "Life and Career Skills", "Learning and Innovation Skills" and "Information, Media and Technology Skills". Also, they have been presented in an integrated and holistic way. On the other hand, each skill has other subskills, which are as follows:

*Life and Career Skills*

- Flexibility and Adaptability
- Initiative and Self-Direction
- Social and Cross-Cultural Skills
- Productivity and Accountability
- Leadership and Responsibility

*Learning and Innovation Skills*

- Creativity and Innovation
- Critical Thinking and Problem Solving
- Communication
- Collaboration

*Information, Media and Technology Skills*

- Information Literacy
- Media Literacy
- ICT (Information, Communications, and Technology) Literacy

The focus of this study is the impact of cooperative learning on the students' 21st century skills development. Cooperative learning is a technique in which individuals learn through others' assistance in a small group, and it can be applied to all kinds of tasks, curriculums as well as age levels. In this sense, it is "an alternative to the traditional competitive classroom" (Singh & Agrawal, 2011, pp. 2). According to Ün Açıkgöz (1992), cooperative learning exists when students work by helping each other's learning in a small group for a shared goal. Therefore, it is a technique to increase the quality of learning in all learning environments. "Classrooms are very social places, but often when teachers think about learning, the focus is on individual learning and the social aspects are often viewed as a distraction and/or a nuisance. If, however, teachers are able to make positive use of this social aspect and the social arrangement of the classroom then more learning would take place" (Sonthara & Vanna, 2009, pp. 2).

Cooperative learning is not just a students' group work process, in which they work together. Cartwright (1993) states it is beyond following the teacher's instructions and mechanical cooperation since it advocates a friendly environment and friendship. Hence, cooperative learning is "an instructional usage enabling students to work together to increase their learning and peers' at the highest level" (Saban, 2002, pp. 243). Cooperative learning has also several benefits. First and foremost, developing students' communication skills, ensuring their achievements in work life, and contributing to their life skills in society might be given. Also, cooperative learning has a great effect by increasing students' motivations as well as performance in addition to enhancement of social interaction skills. Consequently, Davidson (1990) notes cooperative learning proposes an alternative to both traditional whole-class instructions and individual instruction systems.

Reviewing the studies in the knowledge-base, any study on the development of 21st century skills in Turkish courses has not been detected. By considering this gap in the knowledge-base, this study inquired the ways of how to develop 21st century skills, which will assist students to become the qualified individuals of the 21st century. This was also included in Turkey's education vision 2023 [MONE (Ministry of National Education), 2018]. For this purpose, the research questions below were raised.

**Research Questions**

Is there any impact of Turkish courses implemented due to learning together technique from cooperative learning strategies on the 6th graders' 21st century learning and innovation skills development?

The main research question was explored through the following sub-questions:

1. By implementing the cooperative learning technique, is there any significant difference between the pretest and posttest scores of the experimental group in terms of 21st century learning and innovation skills (collaboration, critical thinking, communication, and creativity)?
2. By implementing the cooperative learning technique to the experimental group and traditional methods to the control group, is there any significant difference between the groups in terms of 21st century learning and innovation skills (collaboration, critical thinking, communication, and creativity)?
3. What are the students' observations related to the implementation process during the cooperative learning technique application?

## Method

### Research Design

Aiming to examine the impact of the cooperative learning implementations on the development of 21st century learning and innovation skills in Turkish courses, this study utilized the mixed-methods. In mixed methods, quantitative and qualitative methods are combined to reach more satisfying results on the case inquired or the skills to be developed. A mixed-methods approach, in which the researcher collects both quantitative (closed-ended) and qualitative (open-ended) data to provide a more complete understanding of a research problem than either quantitative or qualitative data alone, is used in health, social and educational studies (Creswell, 2017; Tashakkori & Teddlie, 2003a).

Many designs exist in the mixed methods, and primarily there are six models. They are convergent parallel, explanatory sequential, exploratory sequential, transformative, embedded, and multiphase mixed methods. In this study, "embedded mixed methods design" was utilized in which there is a larger design leading the research and a supporting design embedded in the larger one. This study was conducted to develop the students' 21st century learning and innovation skills, and it was supported with qualitative data to interpret the quantitative data collected from the tests to measure the development of the skills as well as to gain knowledge about the implementation process. As the qualitative data were used to understand experimental results by incorporating perspectives of individuals, the embedded mixed methods design was adopted.

In the embedded mixed method, the qualitative data can be collected during the experiment or after the experiment or before the experiment. In this study, after the first quantitative data was obtained, the qualitative process was carried out. Then, the qualitative data collection was completed with the posttests. To incorporate the participants' views and perspectives into the experimental results, both data sets (quantitative-qualitative) were interpreted together.

### Participants

The study was conducted in a secondary school located in the city center of Bolu province during the academic years, 2018-2019. The study included a control group with 33 students and an experimental group with 33 students in the 6th grade. Typical case sampling was used to determine the study group. Onwuegbuzie and Collins (2007) stated that a study conducted using this method generally produced generalizable data. They also stated that they can provide very important data to practitioners and decision makers, especially in evaluation and implementation policy determination studies. Initially, the rubrics for critical thinking, communication, and creativity, and also a collaboration self-evaluation scale were employed in the six different classrooms of the participant school to equate the groups regarding 21st century skills before composing the groups.

Secondly, the groups were statistically compared before the treatment. The groups' pretest scores from the scale were compared by utilizing independent samples t-test from the parametric tests. With this statistical analysis, it was controlled whether the groups were equated regarding their collaboration skills before the experiment treatment. Accordingly, there was no statistically significant difference between the control and experimental groups regarding the collaboration skills [$t_{(64)} = 1.16$; $p > .05$]. The groups' critical thinking, communication and creativity pretest scores were compared through the measurement of Mann Whitney U-test from the non-parametric tests to check if the groups were equated considering critical thinking, communication and creativity skills or not. There was no significant difference between the groups regarding all the dimensions of each skill. Accordingly, for critical thinking skill, distinguishing knowledge [U = 432.5; $p > .05$], making inferences [U = 528.5; $p > .05$], evaluating [U = 484; $p > .05$], autonomous learning [U = 515; $p > .05$], and communication [U = 514; $p > .05$] are measured. The dimensions of communication skill are groupped

under speaking and listening. Under speaking, introduction [U = 479; $p > .05$], content [U = 495.5; $p > .05$], conclusion [U = 437; $p > .05$], voice and mannerism [U = 453.5; $p > .05$], audience awareness [U = 492; $p > .05$], purpose [U = 488; $p > .05$] using aids [U = 450.5; $p > .05$], and under listening, body language [U = 446.5; $p > .05$], questions [U = 440.5; $p > .05$], interpretation [U = 448; $p > .05$] are measured for communication skill. Creativity dimensions and measurements are fluency [U = 449.5; $p > .05$], flexibility [U = 446; $p > .05$], evaluation [U = 482; $p > .05$], risk-taking [U = 521.5; $p > .05$], seeking challenges [U = 443.5; $p > .05$], elaboration [U = 494.5; $p > .05$]. These results display that the groups are equated regarding their critical thinking, communication and creativity skills before the reasearcher's intervention. Then, by assigning 33 students in 6-D to the experimental group and 33 students in 6-E to the control groups, the process of composing the groups was completed. Also, the study was supported with a teacher to do the implementation and a team of 5 experts for the validity. The implementation of the applications was carried out by the Turkish teacher of the class, which was the study group. After informing about the studies to be done at the beginning of the applications, the process was carried out by making interviews with the practitioner teacher every week before and after the studies.

**Procedure**

For the cooperative learning activities, seven groups including two groups of 4 and five groups of 5 students were formed in the experimental group. After the groups (control-experimental) were pretested, the qualitative data were collected through observation, interview, and student diary. These implementations were administered for 13 weeks. Meanwhile, Turkish courses were implemented due to the curriculum in the control group. After completing the cooperative learning implementations, the groups (control-experimental) were posttested. The research design has been illustrated in Table 1.

**Table 1.** The pretest-posttest control-group quasi-experimental

| Groups | Pretest | Treatment | Posttest |
|---|---|---|---|
| Experimental | O1 | X1 | O3 |
| Control | O2 | X2 | O4 |

**O1:** Pretest scores of the experimental group
**O2:** Pretest scores of the control group
**X1:** Cooperative learning activities
**X2:** Course implementation due to the curriculum
**O3:** Posttest scores of the experimental group
**O4:** Posttest scores of the control group

**Data Collection**

Before the treatment, the 6th grade Turkish coursebook (Şekerci, 2018) was analyzed in a detailed way, and by consulting the expert opinions, appropriate cooperative learning activity to be implemented for each theme was decided. In August 2018, the school and the teacher to implement the activities (U2) were informed, and in September, the consent procedure for the students was started. The groups were pretested between September 24 and 28 in 2018. After the pretest analysis, 13 separate implementations based on cooperative learning were administered between the dates of October 1-5, 2018, and January 7-11, 2019, and also the interviews with the students were employed. However, in the control group, Turkish courses were implemented due to the standards. The groups were posttested between January 14 and 18 in 2019.

In the quantitative phase, "the pretest-posttest control-group quasi-experimental design" (Büyüköztürk, Kılıç, Akgün, Karadeniz & Demirel, 2008) was utilized. According to Karasar (1994), the quasi-

experimental design is widely used in educational researches, and the internal validity threats are controlled when the groups are equated.

The questions asked to the students in the semi-structured interviews with students are as follows:

-Do you like the activities done?

-Do you think these activities are different from other lessons?

-Have any of you not liked / not interested in the activities done?

-Which event did you like the most?

**Instruments**

Drawing on the mixed-methods, both the quantitative and qualitative data were collected together. "The Critical Thinking Rubric, The Communication Rubric, Collaboration Self-Evaluation Scale, and The Creativity Rubric" were used as quantitative data tools. Observations, interviews, and student diaries were the qualitative data tools.

The mentioned measurement tools were used with the permission of the Office of Superintendent of Public Instruction (OSPI), an education inspectorate based in Washington (USA). The institution has many studies related to the 21st century. After deciding which scales to use and obtaining the necessary permissions, the adaptation process of the scales was started. "The process of performing the basic psychometric processes (validity, reliability) of a scale instead of only being translated and used in another language is known as the adaptation of the scale to other languages and cultures" (Deniz, 2007: 4). At this point, it was thought that it would be more useful to use the existing tests instead of developing a new test by taking the opinions of the validity committee. In addition, the fact that the structure to be measured has the same meaning in all cultures to be compared (Hambleton & Patsula, 1999) was another important point in the study.

Two separate lecturers working in the field of Teaching English as a Foreign Language at a university located in the Western Black Sea Region performed the translation of the measurement tools. Coster and Mancini (2015) stated that the first translation should always be done by at least two people working independently from each other. In the selection of the said lecturers, with the view "While choosing a translator, they should be fluent in both languages, familiar with the cultures studied, and have some knowledge about the test structure and the measured structure" (Deniz, 2007: 8) should be knowledgeable about the culture of the original scale, but the mother tongue should be in the (Turkish) language of the target culture." (Çapık, Gözüm, and Aksayan, 2018: 203).

In the second step of the adaptation, the translations made were reviewed and both translations were combined. At this point, the opinions of the validity committee were sought on whether the words in the translations meet the same concept in both cultures, whether cultural differences cause any change in meaning, the suitability of the items for the target group, and whether the translation has a conceptually equivalent quality.

As a result of the evaluations, two different translations were combined into a single translation. Then, the third step, the back translation stage, was started. In order to do the back-translation, help was obtained from two independent translators, one of whom was native English speaker. During the back translation, attention was paid to issues such as conceptual harmony, cultural harmony and linguistic equivalence, which were considered in the first translation. After the completion of the back translation, the translation was compared with the original scale by the researcher in line with the opinions of the validity committee, and no incompatibility was observed apart from minor grammatical differences.

After the completion of the translations, the pilot application was started. Random selection of Erkuş's (2007) pilot study sample it is not true; purposeful sampling should be done." In line with the opinion of the study group, equivalent groups were selected and a pilot application was carried out on these students.

In the reliability analysis of the rubrics applied to measure critical thinking, creativity and communication skills, which are the measurement tools used in the study, a study was carried out on a total of 197 students in four different secondary schools apart from the school where the study was conducted.

The Cronbach Alpha coefficients obtained in the reliability analyzes for three separate rubrics were determined to be 0.701 for the creativity rubric, 0.704 for the critical thinking rubric, and 0.861 for the communication rubric. When these results are examined, it is possible to say that these reliability coefficients are sufficient and high according to Nunnally (1978). In this context, it can be said that the reliability of the rubrics used is ensured. Thus, all stages were completed and the scales were finalized before the pre-tests.

**Data Analysis**

Adopting the mixed methods, the data were analyzed for each database (quantitative and qualitative) separately, but the interpretations were obtained by using both of them at the end of the study. For the quantitative data analysis, the SPSS 18 program was used. Thematic analysis was conducted for the qualitative data analysis, in which the main purpose is to present the interpretations and relationships of the findings (Yıldırım & Şimşek, 2013).

The distribution of the quantitative data was investigated through the kurtosis and skewness values. To assume a normal distribution, the kurtosis and skewness values between +1.5 and -1.5 are accepted (Tabachnick & Fidell, 2013). After investigating the normal distribution of the data for each group, the best analysis technique was determined. Accordingly, before comparing the pretest scores, the normality test of each group was conducted. According to the normality test, parametric and nonparametric statical techniques were determined to use for comparing the test scores.

The analysis and interpretations of the pre-test and post-test data, which are the quantitative data of the research, were carried out by the authors of the study. The analysis of the qualitative data of the semi-structured interviews was also subjected to content analysis by both researchers separately. Comparative analysis was made on the differences that emerged. The reliability formula of Miles and Huberman (1994: 64) was used in the analysis.

Miles and Huberman (1994) stated that the result to be obtained through this formula should provide at least 70% reliability. In the calculation made for this study, the reliability was calculated as 92%. For the remaining 8%, the expert opinion was consulted and unity was achieved in practice.

## Findings

**The findings on the RQ1**

The findings on the first research question have been displayed through the tables and explanations.

**The findings on the pretest and posttest scores**

The groups' pretest and posttest scores from the quantitative data tools were analyzed (control-experimental) separately to determine whether the treatment produced any effect on the experimental group regarding the dependant variable. Additionally, the scores of the control group taking no treatment were evaluated considering the dependant variable. For each quantitative data tool, the results have been displayed separately.

To measure the significant difference between the pretest and posttest collaboration scores of each group, Paired-Samples T-Test was used. Utilizing the Wilcoxon Signed Rank Test for Paired Samples, the

critical thinking, communication, and creativity pretest and posttest scores were compared. With these analyses, the groups were controlled and compared separately.

**The findings on the collaboration scale analyses**

**Table 2.** The collaboration scale pretest and posttest scores

| Group | Score | n | Mean | *t* | sd | p |
|---|---|---|---|---|---|---|
| Experimental | Pretest | 33 | 27.87 | -16.67 | 32 | 0.00* |
| | Posttest | 33 | 39.06 | | | |
| Control | Pretest | 33 | 30.72 | -1.13 | 32 | 0.26 |
| | Posttest | 33 | 31.18 | | | |

**$p < .01$

According to Table 2, there is a significant difference between the pretest and posttest scores of the experimental group ($t_{(32)}$ = -16.67; p<0,05). However, it was found out no significant change between the pretest and posttest scores of the control group ($t_{(32)}$ = -1.13; p>0,05). Therefore, it might be concluded that cooperative learning implementations have enhanced students' collaboration skills significantly in the experimental group. Nevertheless, any change has not been observed in the control group. Hence, the implementations used by the researcher may influence the students' collaboration skill development.

**The findings on the critical thinking rubric**

**Table 3.** The critical thinking rubric pretest and posttest scores

| Score | Group | Posttest-Pretest | n | Mean Rank | Sum of Rank | z | p |
|---|---|---|---|---|---|---|---|
| Distinguishing Knowledge | Experimental | Negative rank | 1 | 7.50 | 7.50 | -3.80 | 0.000** |
| | | Positive rank | 19 | 10.65 | 202.50 | | |
| | | Ties | 13 | | | | |
| | | Total | 33 | | | | |
| | Control | Negative rank | 3 | 3.50 | 10.50 | 0.00 | 1.00 |
| | | Positive rank | 3 | 3.50 | 10.50 | | |
| | | Ties | 27 | | | | |
| | | Total | 33 | | | | |
| Making Inferences | Experimental | Negative rank | 2 | 4.50 | 9.00 | -2.63 | 0.01* |
| | | Positive rank | 11 | 7.45 | 82.00 | | |
| | | Ties | 20 | | | | |
| | | Total | 33 | | | | |
| | Control | Negative rank | 5 | 5.50 | 27.50 | -0.53 | 0.59 |
| | | Positive rank | 6 | 6.41 | 38.50 | | |
| | | Ties | 22 | | | | |
| | | Total | 33 | | | | |
| Evaluating Sources | Experimental | Negative rank | 6 | 10.50 | 63.00 | -2.27 | 0.02* |
| | | Positive rank | 16 | 11.87 | 190.00 | | |
| | | Ties | 11 | | | | |
| | | Total | 33 | | | | |
| | Control | Negative rank | 6 | 5.25 | 31.50 | -1.15 | 0.25 |
| | | Positive rank | 3 | 4.50 | 13.50 | | |
| | | Ties | 24 | | | | |
| | | Total | 33 | | | | |
| Autonomous Learning | Experimental | Negative rank | 3 | 8.50 | 25.50 | -3.16 | 0.00** |
| | | Positive rank | 17 | 10.85 | 184.50 | | |
| | | Ties | 13 | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Total | 33 | | | | |
| | Control | Negative rank | 7 | 7.00 | 49.00 | -0.27 | 0.78 |
| | | Positive rank | 6 | 7.00 | 42.00 | | |
| | | Ties | 20 | | | | |
| | | Total | 33 | | | | |
| Communication | Experimental | Negative rank | 1 | 9.00 | 9.00 | -3.87 | 0.000* |
| | | Positive rank | 19 | 10.57 | 201.00 | | |
| | | Ties | 13 | | | | |
| | | Total | 33 | | | | |
| | Control | Negative rank | 6 | 5.50 | 33.00 | -0.63 | 0.53 |
| | | Positive rank | 4 | 5.50 | 22.00 | | |
| | | Ties | 23 | | | | |
| | | Total | 33 | | | | |

*$p < .05$, **$p<.01$, ***$p<.001$

Table 3 shows that a significant improvement in all the dimensions of critical thinking skill (distinguishing knowledge, making inferences, evaluating, autonomous learning, communication) has been observed in the experimental group. In the control group, any significant improvement in any dimension has not been detected. Accordingly, the implementations used in the study might affect the development of critical thinking skill.

**The findings on the communication rubric**

**Table 4.** The communication rubric pretest and posttest scores

| Score | | Group | Posttest-Pretest | N | Mean Rank | Sum of Rank | z | p |
|---|---|---|---|---|---|---|---|---|
| Speaking | Introduction | Experimental | Negative rank | 0 | 0.00 | 0.00 | -4.58 | 0.000*** |
| | | | Positive rank | 21 | 11.00 | 231.00 | | |
| | | | Ties | 12 | | | | |
| | | | Total | 33 | | | | |
| | | Control | Negative rank | 8 | 6.50 | 52.00 | -1.15 | 0.25 |
| | | | Positive rank | 4 | 6.50 | 26.00 | | |
| | | | Ties | 21 | | | | |
| | | | Total | 33 | | | | |
| | Content | Experimental | Negative rank | 0 | 0.00 | 0.00 | -5.01 | 0.000*** |
| | | | Positive rank | 26 | 13.50 | 351.00 | | |
| | | | Ties | 7 | | | | |
| | | | Total | 33 | | | | |
| | | Control | Negative rank | 4 | 6.50 | 26.00 | -1.15 | 0.25 |
| | | | Positive rank | 8 | 6.50 | 52.00 | | |
| | | | Ties | 21 | | | | |
| | | | Total | 33 | | | | |
| | Conclusion | Experimental | Negative rank | 0 | 0.00 | 0.00 | -4.47 | 0.000*** |
| | | | Positive rank | 20 | 10.50 | 210.00 | | |
| | | | Ties | 13 | | | | |
| | | | Total | 33 | | | | |
| | | Control | Negative rank | 7 | 5.71 | 40.00 | -1.38 | 0.17 |
| | | | Positive rank | 3 | 5.00 | 15.00 | | |
| | | | Ties | 23 | | | | |
| | | | Total | 33 | | | | |
| | | Experimental | Negative rank | 0 | 0.00 | 0.00 | -4.12 | 0.000*** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Positive rank | 17 | 9.00 | 153.00 | | |
| | | | Ties | 16 | | | | |
| | | | Total | 33 | | | | |
| | Voice and Mannerism | Control | Negative rank | 2 | 3.00 | 6.00 | -0.44 | 0.66 |
| | | | Positive rank | 3 | 3.00 | 9.00 | | |
| | | | Ties | 28 | | | | |
| | | | Total | 33 | | | | |
| Speaking | Audience | Experimental | Negative rank | 0 | 0.00 | 0.00 | -4.18 | 0.000*** |
| | | | Positive rank | 19 | 10.00 | 190.00 | | |
| | | | Ties | 14 | | | | |
| | | | Total | 33 | | | | |
| | | Control | Negative rank | 5 | 5.00 | 25.00 | -0.33 | 0.74 |
| | | | Positive rank | 4 | 5.00 | 20.00 | | |
| | | | Ties | 24 | | | | |
| | | | Total | 33 | | | | |
| | Purpose | Experimental | Negative rank | 0 | 0.00 | 0.00 | -4.69 | 0.000*** |
| | | | Positive rank | 22 | 11.50 | 253.00 | | |
| | | | Ties | 11 | | | | |
| | | | Total | 33 | | | | |
| | | Control | Negative rank | 4 | 3.00 | 12.00 | -1.34 | 0.18 |
| | | | Positive rank | 1 | 3.00 | 3.00 | | |
| | | | Ties | 28 | | | | |
| | | | Total | 33 | | | | |
| Speaking | Using Aids | Experimental | Negative rank | 0 | 0.00 | 0.00 | -4.49 | 0.000*** |
| | | | Positive rank | 21 | 11.00 | 231.00 | | |
| | | | Ties | 12 | | | | |
| | | | Total | 33 | | | | |
| | | Control | Negative rank | 8 | 7.00 | 56.00 | -0.83 | 0.41 |
| | | | Positive rank | 5 | 7.00 | 35.00 | | |
| | | | Ties | 20 | | | | |
| | | | Total | 33 | | | | |
| Listening | Body Language | Experimental | Negative rank | 0 | 0.00 | 0.00 | -4.24 | 0.000*** |
| | | | Positive rank | 18 | 9.50 | 171.00 | | |
| | | | Ties | 15 | | | | |
| | | | Total | 33 | | | | |
| | | Control | Negative rank | 5 | 3.00 | 15.00 | -2.23 | 0.03* |
| | | | Positive rank | 0 | 0.00 | 0.00 | | |
| | | | Ties | 28 | | | | |
| | | | Total | 33 | | | | |
| | Questions | Experimental | Negative rank | 0 | 0.00 | 0.00 | -5.01 | 0.000*** |
| | | | Positive rank | 26 | 13.50 | 351.00 | | |
| | | | Ties | 7 | | | | |
| | | | Total | 33 | | | | |
| | | Control | Negative rank | 2 | 1.50 | 3.00 | -1.41 | 0.16 |
| | | | Positive rank | 0 | 0.00 | 0.00 | | |
| | | | Ties | 31 | | | | |
| | | | Total | 33 | | | | |
| | Interpre-tation | Experimental | Negative rank | 0 | 0.00 | 0.00 | -5.38 | 0.000** |
| | | | Positive rank | 29 | 15.00 | 435.00 | | |
| | | | Ties | 4 | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Total | 33 | | | | |
| Control | Negative rank | 3 | 3.00 | 9.00 | -0.44 | 0.66 |
| | Positive rank | 2 | 3.00 | 6.00 | | |
| | Ties | 28 | | | | |
| | Total | 33 | | | | |

*$p < .05$, **$p<.01$, ***$p<.001$

The results in Table 4 revealed that the students in the experimental group displayed a significant improvement regarding all the dimensions of communication skill (under speaking; introduction, content, conclusion, voice and mannerism, audience awareness, using aids, and under listening; body language, interpretation). Any observation on the improvement regarding all the dimensions of communication skill has not been detected in the control group. Hence, it might be stated the implementations used in the study have enhanced the students' communication skills.

**The findings on the creativity rubric**

**Table 5.** The creativity rubric pretest and posttest scores

| Score | Group | Posttest-Pretest | n | Mean Rank | Sum of Rank | z | p |
|---|---|---|---|---|---|---|---|
| Fluency | Experimental | Negative rank | 0 | 0.00 | 0.00 | -5.38 | 0.000*** |
| | | Positive rank | 29 | 15.00 | 435.00 | | |
| | | Ties | 4 | | | | |
| | | Total | 33 | | | | |
| | Control | Negative rank | 2 | 2.00 | 4.00 | -0.57 | 0.56 |
| | | Positive rank | 1 | 2.00 | 2.00 | | |
| | | Ties | 30 | | | | |
| | | Total | 33 | | | | |
| Flexibility | Experimental | Negative rank | 0 | 0.00 | 0.00 | -4.35 | 0.000*** |
| | | Positive rank | 19 | 10.00 | 190.00 | | |
| | | Ties | 14 | | | | |
| | | Total | 33 | | | | |
| | Control | Negative rank | 7 | 4.50 | 31.50 | -2.12 | 0.03* |
| | | Positive rank | 1 | 4.50 | 4.50 | | |
| | | Ties | 25 | | | | |
| | | Total | 33 | | | | |
| Evaluation | Experimental | Negative rank | 0 | 0.00 | 0.00 | -4.89 | 0.000*** |
| | | Positive rank | 24 | 12.50 | 300.00 | | |
| | | Ties | 9 | | | | |
| | | Total | 33 | | | | |
| | Control | Negative rank | 0 | 0.00 | 0.00 | -2.44 | 0.01* |
| | | Positive rank | 6 | 3.50 | 21.00 | | |
| | | Ties | 27 | | | | |
| | | Total | 33 | | | | |
| Risk-taking | Experimental | Negative rank | 0 | 0.00 | 0.00 | -4.37 | 0.00001*** |
| | | Positive rank | 20 | 10.50 | 210.00 | | |
| | | Ties | 13 | | | | |
| | | Total | 33 | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Control | Negative rank | 5 | 5.50 | 27.50 | 0 | 1.00 |
| | | Positive rank | 5 | 5.50 | 27.50 | | |
| | | Ties | 23 | | | | |
| | | Total | 33 | | | | |
| Seeking challenges | Experimental | Negative rank | 0 | 0.00 | 0.00 | -3.87 | 0.000*** |
| | | Positive rank | 15 | 8.00 | 120.00 | | |
| | | Ties | 18 | | | | |
| | | Total | 33 | | | | |
| | Control | Negative rank | 2 | 3.50 | 7.00 | -0.81 | 0.41 |
| | | Positive rank | 4 | 3.50 | 14.00 | | |
| | | Ties | 27 | | | | |
| | | Total | 33 | | | | |
| Elaboration | Experimental | Negative rank | 0 | 0.00 | 0.00 | -4.47 | 0.000*** |
| | | Positive rank | 20 | 10.50 | 210.00 | | |
| | | Ties | 13 | | | | |
| | | Total | 33 | | | | |
| | Control | Negative rank | 6 | 3.50 | 21.00 | -2.44 | 0.01* |
| | | Positive rank | 0 | 0.00 | 0.00 | | |
| | | Ties | 27 | | | | |
| | | Total | 33 | | | | |

*$p < .05$, **$p<.01$, ***$p<.001$

The results in Table 5 discovered that the students in the experimental group displayed a significant improvement regarding all the dimensions of creativity skill (fluency, flexibility, evaluation, risk-taking, seeking challenges, elaboration). Any observation on the improvement considering all the dimensions of creativity has not been detected in the control group. Hence, it might be stated that the implementations used in the study have enhanced the students' creativity skills.

**The findings on the RQ2**

The critical thinking, communication, and creativity skill scores were compared through the measurement of Mann-Whitney U test for Independent Samples from the nonparametric tests while the collaboration posttest scores of the groups were analyzed by using Independent Samples t-test from the parametric tests like the pretest score analyses. The related findings on the second research question have been displayed in the tables and explanations.

**The findings on the posttest scores analyses**

**The findings on the collaboration scale analyses**

**Table 6.** The collaboration scale posttest scores

| Group | n | Mean | t | sd | p |
|---|---|---|---|---|---|
| Experimental | 33 | 39.06 | 8.81 | 45.02 | 0.000* |
| Control | 33 | 31.18 | | | |

***$p < .001$

According to Table 6, there is a significant difference between the control and experimental group posttest scores regarding collaboration skill ($t_{(45,029)} = 8.819$; $p<0.05$). Considering the means, the experimental group significantly displayed a change compared to the control group, which proves that the implementations

used in the study produced an effective enhancement when the equality of the pretest scores are particularly considered.

**The findings on the critical thinking rubric**

**Table 7.** The critical thinking rubric posttest scores

| Score | Group | n | Mean Rank | Sum of Rank | U | p |
|---|---|---|---|---|---|---|
| Distinguishing Knowledge | Experimental | 33 | 41.00 | 1353.00 | 297.00 | 0.000*** |
| | Control | 33 | 26.00 | 858.00 | | |
| | Total | 66 | | | | |
| Making Inferences | Experimental | 33 | 39.42 | 1301.00 | 349.00 | 0.000*** |
| | Control | 33 | 27.57 | 910.00 | | |
| | Total | 66 | | | | |
| Evaluating Sources | Experimental | 33 | 38.13 | 1258.50 | 391.50 | 0.03* |
| | Control | 33 | 28.86 | 952.50 | | |
| | Total | 66 | | | | |
| Autonomous Learning | Experimental | 33 | 40.83 | 1347.50 | 302.50 | 0.000*** |
| | Control | 33 | 26.16 | 863.50 | | |
| | Total | 66 | | | | |
| Communication | Experimental | 33 | 42.48 | 1402.00 | 248.00 | 0.000*** |
| | Control | 33 | 24.51 | 809.00 | | |
| | Total | 66 | | | | |

*$p < .05$, ***$p<.001$

Table 7 presents that there is a significant difference between the groups regarding critical thinking skill although the groups have similar pretest scores. According to the mean rank values, the experimental group significantly showed a difference compared to the control group. In other words, after the treatment by the researcher, the students in the experimental group displayed a significant improvement considering all the dimensions of critical thinking compared to the ones in the control group. Therefore, the implementations used in the study seem to influence the students' critical thinking skill development.

**The findings on the communication rubric**

**Table 8.** The communication rubric posttest scores

| Score | | Group | n | Mean Rank | Sum of Rank | U | p |
|---|---|---|---|---|---|---|---|
| Speaking | Introduction | Experimental | 33 | 43.59 | 1438.50 | 211.50 | 0.000*** |
| | | Control | 33 | 23.40 | 772.50 | | |
| | | Total | 66 | | | | |
| | Content | Experimental | 33 | 36.68 | 1210.50 | 439.50 | 0.12 |
| | | Control | 33 | 30.31 | 1000.50 | | |
| | | Total | 66 | | | | |
| | Conclusion | Experimental | 33 | 38.65 | 1275.50 | 374.50 | 0.01* |
| | | Control | 33 | 28.34 | 935.50 | | |
| | | Total | 66 | | | | |
| | Voice and Mannerism | Experimental | 33 | 36.53 | 1205.50 | 444.50 | 0.15 |
| | | Control | 33 | 30.47 | 1005.50 | | |
| | | Total | 66 | | | | |
| | Audience | Experimental | 33 | 40.93 | 1351.00 | 299.00 | 0.000*** |
| | | Control | 33 | 26.06 | 860.00 | | |
| | | Total | 66 | | | | |
| | Purpose | Experimental | 33 | 42.42 | 1400.00 | 250.00 | 0.000*** |
| | | Control | 33 | 24.57 | 811.00 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Total | 66 | | | | |
| | Using Aids | Experimental | 33 | 41.33 | 1364.00 | 286.00 | 0.000*** |
| | | Control | 33 | 25.66 | 847.00 | | |
| | | Total | 66 | | | | |
| Listening | Body Language | Experimental | 33 | 38.54 | 1272.00 | 378.00 | 0.01* |
| | | Control | 33 | 28.45 | 939.00 | | |
| | | Total | 66 | | | | |
| | Questions | Experimental | 33 | 39.33 | 1298.00 | 352.00 | 0.01* |
| | | Control | 33 | 27.66 | 913.00 | | |
| | | Total | 66 | | | | |
| | Interpretation | Experimental | 33 | 41.53 | 1370.50 | 279.50 | 0.000*** |
| | | Control | 33 | 25.47 | 840.50 | | |
| | | Total | 66 | | | | |

*$p < .05$, ***$p<.001$

According to Table 8, there is a significant difference between the posttests scores of the groups regarding all the dimensions of communication skill after the treatment by the researcher. In other words, after the treatment by the researcher, the students in the experimental group displayed a significant improvement considering communication skill compared to the ones in the control group. The implementations used in the study might influence the students' communication skill development.

**The findings on the creativity rubric**

**Table 9.** The creativity rubric posttest scores

| Score | Group | n | Mean Rank | Sum of Rank | U | p |
|---|---|---|---|---|---|---|
| Fluency | Experimental | 33 | 39.40 | 1251.50 | 388.50 | 0.02* |
| | Control | 33 | 30.59 | 1009.50 | | |
| | Total | 66 | | | | |
| Flexibility | Experimental | 33 | 41.57 | 1372.00 | 278.00 | 0.000*** |
| | Control | 33 | 25.42 | 839.00 | | |
| | Total | 66 | | | | |
| Evaluation | Experimental | 33 | 40.00 | 1320.00 | 330.00 | 0.000*** |
| | Control | 33 | 27.00 | 891.00 | | |
| | Total | 66 | | | | |
| Risk-taking | Experimental | 33 | 41.92 | 1383.50 | 266.50 | 0.000*** |
| | Control | 33 | 25.07 | 827.50 | | |
| | Total | 66 | | | | |
| Seeking Challenges | Experimental | 33 | 43.68 | 1441.50 | 208.50 | 0.000*** |
| | Control | 33 | 23.31 | 769.50 | | |
| | Total | 66 | | | | |
| Elaboration | Experimental | 33 | 43.77 | 1444.50 | 205.50 | 0.000*** |
| | Control | 33 | 23.22 | 766.50 | | |
| | Total | 66 | | | | |

*$p < .05$, ***$p<.001$

According to the results in Table 9, a significant difference between the groups regarding creativity skill has been detected. Considering the mean rank values, the experimental group displayed a significant difference compared to the control group. After the treatment by the researcher, the students in the experimental group significantly showed an enhancement of creativity skill compared to the ones in the

control group. Hence, the implementations used in the study seem to produce an effect on the students regarding their creativity skills.

**The findings on the RQ3**

By considering the third research question of the study, which is about the participants' observations related to the cooperative learning implementations, the themes generated from the qualitative data are interest and motivation, collaboration, creativity, leadership and entrepreneurship, communication, differences, and technology. Accordingly, it was uncovered that the cooperative learning implementations administered by the researcher increased the students' interests and motivations towards the Turkish course. Additionally, it was found out that the culture of collaboration was fostered through each implementation with an increase and the students gained a communication competence. Moreover, the observations showed that the implementations supported the students' creativity skills since they presented novel ideas and products. Moreover, the implementations encouraged the students to develop not only learning and innovative skills but also other skills such as information and technology, life, and career.

*Some sample sentences from the student diaries are as follows:*

Interest and Motivation:

"As always, it was an activity that made me happy (P1)."

"We have been waiting impatiently for this lesson for a week (P7)."

Collaboration:

"We shared tasks and started the event (P13)."

"We worked in cooperation in the group and prepared a very good poster (P14)."

Creativity:

"I said that if we want to be the first to my friends, we should do it differently than everyone else (P8)."

"Our teacher said that original works are more important, and we did our best (P5)."

Leadership and Entrepreneurship:

"As in the first activity, I distributed tasks to my friends (P12)."

"Only I was willing for the presentation to be made on the board (P5)."

Communication:

"We always listen to each other's opinions first (P9)."

"The best part of our group is that everyone listens to each other and respects their ideas (P10)."

Differences:

"Normally we read the book and do activities in Turkish lessons, and sometimes we do grammar, but these lessons were very different from them. We haven't been doing such classes until now (P6)."

"These activities are of course different. Because we form groups, we do the work accordingly, it is not like this in other lessons (P8)."

Technology:

"We had the class watch the video we prepared with the movie maker program (P11)."

"Preparing the lesson on the computer is just for me (P7)."

*Some sample sentences from the semi-structured interviews with students are as follows:*

P8: I really liked the activities held because they all seemed different to me. Every week we did new events with our group. All of them were very enjoyable.

P2: I think the activities we did were very different from other lessons. While we were teaching the lesson with our teacher in other lessons, we worked with our friends in these lessons.

P7: I liked all the activities very much. There was no activity that I didn't like.

P13: I liked the activity of preparing posters the most. Together we prepared a very nice poster. We were very happy when our poster was chosen first.

P9: It was very nice to have our lessons with friends. I wish all the lessons were like that from now on.

P11: We didn't understand how this lesson went. It was very enjoyable. There was competition with other groups in the lessons. At first, not everyone contributed to the lessons. However, the unity of the groups increased even more afterwards.

P5: When the events started, I didn't think I would love it this much. It was very nice to prepare presentations together and present them on the board. Each lesson we were doing different activities. It was very different from other Turkish lessons.

P1: I liked the Karagöz presentation the most. We wrote the texts and presented them on the board. Our friends gave us points, we were chosen as the first group. These lessons passed very quickly, we never got bored. We were even sad that it was over.

P6: Everyone was active in these classes. In previous lessons, we were reading texts and answering questions. That's why Turkish lessons were boring. But in these lessons, we had funny lessons with groups. We made presentations and prepared posters. They were all very beautiful.

P12: I loved all the activities. I used to not attend Turkish lessons much before. But frankly, I liked it very much when the lessons were taught with such groups. I wish all our classes were like this.

P4: The lesson is not just taught by the teacher. We were all in lessons. The teacher said at first and than we were conducting the lesson. When all groups thought that the best work would be ours, everyone was trying to do their best.

## Discussion, Conclusion and Recommendations

This study aims to develop collaboration, critical thinking, communication, and creativity skills, which are included in 21st century learning and innovation skills. The quantitative and qualitative data collected through the mixed-methods were utilized together to reach any conclusion or to generate any interpretations.

Regarding the first question of the study, the students in the experimental group displayed meaningful and significant progress in the dimensions of critical thinking skill (distinguishing knowledge, making inferences, evaluating sources, autonomous learning, and communication). Similarly, a significant improvement in all the dimensions of communication skill, which are introduction, content, conclusion, voice and mannerism, audience, purpose, using aids related to speaking, and body language, questions, interpretation related to listening, was detected. Considering creativity skill, the students' creativity scale scores showed their significant change regarding all the dimensions as fluency, flexibility, evaluation, risk-taking, seeking challenges, and elaboration. Therefore, it is concluded that Turkish courses implemented due to cooperative learning activities seem to contribute to the students' development of collaboration, critical thinking, communication, and creativity skills as well as all the dimensions related to these skills. These results

indicate an agreement with other studies (Güngör Kılıç, 2004; Gümüş & Buluç, 2007; Uysal, 2009; Eskitürk, 2009; Kırbaş, 2010; Arısoy & Tarım, 2013; Bilgin, Aktaş & Çetin, 2014; Ekinci, 2018).

The findings on the second research questions revealed that the experimental group displayed a significant change compared to the control group regarding collaboration skill, which also shares similarities with the previous studies on cooperative learning (Güngör Kılıç, 2004; Gümüş & Buluç, 2007; Eskitürk, 2009; Uysal, 2009; Kırbaş, 2010; Arısoy & Tarım, 2013; Bilgin, Aktaş & Çetin, 2014; Ekinci, 2018).

The qualitative findings reached through the observations, interviews, and student diaries support these results. Accordingly, the students have shown a great interest in Turkish courses implemented according to cooperative learning techniques, and also their motivation has increased. Moreover, when implementing cooperative learning activities in Turkish courses, the students have displayed behaviors such as contributing to the group works, setting goals and tasks, offering creative ideas and solutions, showing a willingness to deal with challenges, seeking sources and sharing them, showing respect to weak ideas, attending discussions, and having empathy. It has been observed that the students could generate fluent and flexible thinking, make evaluations, take risks, seek challenges without boundaries, and embellish ideas, which proves the enhancement of creativity. Cooperative learning activities contribute to not only the students' 21st century learning and innovation skills but also the development of their life and career skills such as leadership and entrepreneurship since some students distinguished with their leadership characteristics in organizing the works have displayed progress with the implementations. However, it has been detected that some other students having attitudes of shyness at the initial implementations have participated actively in not only the group works but also the presentations in the later courses.

Another result of cooperative learning activities as group works is the students' progress in communication skill since the students have performed more qualified listening skills and become more cautious about speaking rules. Also, it has been discovered that the students who preferred being silent in groups at the initial activities have changed by establishing good communication in the latter courses. Lastly, the students' motivations and interests have increased as the courses implemented according to cooperative learning techniques are different from the traditional implementations.

The results appear to agree with the studies (Çörek, 2006; Susar Kırmızı, 2006; Arısoy & Tarım, 2013; Bilgin, Aktaş & Çetin, 2014; Köstereliođlu, 2014; Purwanto, Mustaji, Prasetyo, Pamungkas & Sukarman, 2018), and with the previous studies on cooperative learning model (Yıldırım, 2010; Yönez, 2012; Kardaş, 2013; Pateşan, Balagiu & Zechia, 2016; Vhalery & Nofriansyah, 2018). The cooperative learning model not only provides a pleasant environment for learning but also supports students in terms of building interactions, social relationships and removing gender and status bias. Moreover, this model decreases the psychological problems as it enables students to build positive relationships in groups. It also supports the students with learning problems to catch up with their peers. Students can improve cognitive skills such as problem-solving, divergent thinking, creativity as well as collaboration skills like organizing the group works, sharing the works equally, trusting each other for production.

Considering the current studies, Önal's (2020) conclusion that collaborative work increases persuasive and individual writing success and students develop positive attitudes towards collaborative learning is consistent with the results of this study. Arı (2020) stated that cooperative teaching techniques are effective in the acquisition of values such as responsibility and benevolence; The result that it contributes to the development of basic skills such as communication, cooperation and social participation also supports the results of this study. In another study, as stated by Ünal and Çakır (2021), "students can both learn the course content permanently and acquire the skills that are expressed as 21st century skills that are required today." results of this study are similar.

Considering the contributions of the cooperative learning method in this study, this technique can be given more space in teaching environments. It can be ensured that students gain these skills by including 21st century skills in a sufficient and balanced way in the programs that are updated periodically according to the needs of the age, and in all kinds of teaching materials and content to be prepared depending on the programs.

In this study, it is focused on the acquisition of 21st century skills by the cooperative learning method in Turkish lessons. Apart from Turkish lessons, studies on 21st century skills and cooperative learning can be included in other lessons. In this study, activities were carried out on learning and innovation skills, which are one of the three main dimensions of 21st century skills. In different studies, studies on life and career skills, which are other dimensions of 21st century skills, and information, media and technology skills can be carried out.

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International Online Journal of Educational Sciences

ISSN: 1309-2707

# Investigation of Turkish Education Applied in Science and Art Centers to Gifted Students in Turkey*

*Research Article*

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**To cite this article:** Alevli, O., & Okur, A. (2021). Investigation of Turkish education applied in science and art centers to gifted students in Turkey, *International Online Journal of Educational Sciences*, *13*(5), 1560-1576.

ARTICLE INFO

*Article History*:

Received: 09.06.2021

Available online: 05.10.2021

ABSTRACT

The aim of this research is to determine the quality of Turkish education in science and art centers (SACs) through the opinions and practices of teachers and students. In this research is a qualitative research where a case study design was adopted. The study group of this research was chosen as 19 teachers and 29 students from various SACs from different regions of Turkey in the 2017- 2018 Academic Year. Data were collected through the semi-structured teacher and student interview forms, semi-structured observations, reflective journaling, and documents. The collected data were analyzed using content analysis and descriptive analysis methods. It was found out that teachers who attend Turkish courses in SACs make different adjustments in curriculum according to the characteristics of gifted students and enrich the activities, use various methods and techniques, use various materials that attract students' attention in the teaching process and different assessment. It has been determined that students have positive opinions about Turkish education in SACs. It will be useful to organize training for teachers in cooperation with universities on new methods and techniques to support differentiation and enrichment. It will be beneficial to develop visually rich, technology-based and game-based materials for SACs Turkish lessons.



**Keywords:**
Gifted students, Turkish education, science and art centers

## Introduction

Gifted individuals have contributed greatly to the development of science and art throughout history. The education that gifted students will receive according to their interests, needs, and abilities is very important in the advancement of countries and their advancement over the level of modern civilization. Thus, these students will be able to maximize their potential. Gifted children have extraordinary memories, are curious about different topics, their language development is faster than normal, they can use different ways

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DOI: https://doi.org/10.15345/iojes.2021.05.016

to solve problems, they can produce original ideas and solutions, their maths and calculation skills are high, they start abstract thinking at an early age and their imagination is rich. They are sensitive to the feelings of others, they show leadership skills in the peer group, they are perfectionists, they deal with social and environmental problems, they have a strong sense of justice, they have organizational skills, they are creative, they learn fast. (Ataman, 2014; Baykoç, 2014; Clark, 2012; Dağlıoğlu, 2014; Harrison, 2004; MoNE, 2016; Sak, 2017; Silverman, 1992).

People think, learn, and produce differently; If the subject to learn and learning style are suitable for an individual's intelligence type, the potential for development increases (Tomlinson, 2014). The education that gifted children will receive should be versatile and it must be enriched so as to develop creativity; that is, it should include depth, width, complexity, and abstraction, and it should be compelling. With depth, the contents are examined and evaluated in-depth, but with width, the disciplinary and interdisciplinary connections are established, the sophistication is the opportunity to think at a high level, abstraction is the visualization and generalization of information in the world of imagination.

In the planned events for gifted students, real-world problems should be addressed and opportunities should be created for independent studies (Shore & Delcourt, 1996). Also, the pace of teaching should be tailored to students. These features take us to the concept of differentiation. Differentiation is the changes made in the content, process and product elements of the curriculum according to the students' readiness, interest and learning profiles (Gregory & Chapman, 2013; Tomlinson, 2014; Tortop, 2015; Türkman, 2017).

In Turkey, at the end of the educational assessment and diagnostic process conducted by the Ministry of National Education [MoNE] students are identified as gifted and gifted students receive differentiated and enriched education in science and art centers (SACs). Students enrolled in these centers receive special training respectively in the areas of adaptation, support training, awareness of individual talents (AoIT), development of special talents (DoST), and project production and management (MoNE, 2016).

The development of these students' native language skills, which have an important role in the development of these students'communication skills, high-level cognitive skills, and lifelong learning skills depend on the quality of the Turkish courses they take. Gifted students in Turkey receive Turkish lessons in SACs in addition to the lessons in their own schools. The main task of the Turkish lesson is to develop and promote students' language skills. This task also means promoting students' skills in this direction by improving their art, aesthetic measure, creative language use, and perceptions (Yıldız, 2013). Turkish lessons should aim to develop students' creative, aesthetic, and emotional skills. Individuals who are competent in their native language should be raised to become individuals who question, solve problems, and have a decision-making personality. A different and enriched native language teaching for gifted students should be challenging. The curriculum should include creative thinking and critical thinking skills. It should provide students with methods and resources that fully interact with their high-level cognitive skills and abilities (Clark, 2012; Smutny, 2001).

VanTassel-Baska (2003) stated that gifted students, when exposed to balanced listening and speaking in verbal communication, benefit from this and emphasizes listening interrogatively. Metacognitive skills such as assessment and deduction are among the requirements of critical listening. In order to be a good critical listener, gifted students should acquire the behaviour of asking open-ended questions about what they listen to. When we look at some research studies on reading skills, it is seen that these students generally learn to read at an early age, have a rich vocabulary, enjoy reading and have a positive attitude towards reading (Akarsu, 2001; Ataman, 2014; Austin, 2011; Cavazos-Kottke, 2006; Davaslıgil & Leana, 2004; Reis et al., 2004; VanTassel-Baska et al., 1996; Vosslamber, 2002; Wood, 2008; Worrell, Roth & Gabelko, 2007). The quality of the language used in the books chosen for gifted readers is important, books using different and complex language structures are the main source of mental development, the reading program should include various

reading materials and strategies based on the needs and demands of the student (Allington, 2002; Levande, 1999; Mathia, 2015; Mcgirt, 2017; Shanahan, Fisher & Frey, 2012; Vosslamber, 2002). In order for gifted readers to reach their academic potential, reading texts should have features that support creative thinking and critical thinking should be used consistently (Dixon et al., 2004; Keskin, 2015, Yalçın, 2018). Especially biographies and historical events are rich resources for students to gain multiple perspectives. The lives of the geniuses can be used as bibliotherapy as well (Leana-Taşcılar, 2012).

Content can be enriched by using different types of complex, interesting and high-level texts at different reading levels. Texts containing universal themes related to real life can be used from websites and newspapers. Students should be enabled to choose their own reading texts and books on a variety of topics, depending on their interests and abilities (Tomlinson, 2000; VanTassel-Baska, 2003; Weber & Cavanaugh, 2006; Wood, 2008).

When gifted students' imagination and creativity are combined with a diverse and rich creative writing education, they can be expected to become talented poets and writers. Qualified writing requires teaching to use the formal arrangements of literary elements and exposure to qualified works. Students should know the traditions of written expression and children's literature products should be read (Baş, 2015).

When the studies conducted in Turkey are examined; it is observed that there are studies such as differentiated teaching practices for gifted students related to native language education (Akça-Üşenti, 2013; Ayrancı & Mete, 2017; Bozca-İşlekeller, 2017; İşlekeller, 2008; Tanrıkulu & Yoğurtçu, 2018), attitudes towards Turkish lesson (Okur & Özsoy, 2013), reading strategies (Karababa & Kaya, 2018; Mert, 2018), reading attitudes and habits (Alevli, 2018; Okur & Özsoy, 2017, Ünal, 2019; Ünal, Demirtaş & Gür Erdoğan, 2018), media literacy (Okur & Alevli, 2018), creative writing (Özdemir, 2010; Saluk & Pilav, 2018; Şahin, 2020), writing strategies (Ayrancı, 2013; Bi, 2020; İnnalı, 2018; Karsak, 2014; Yaylacık, 2014), writing anxiety (Özsoy; 2015), Turkish teachers' opinions regarding SACs individualized education plans (Ateş, 2017; Ayrancı & Mete, 2017) and use of materials in Turkish lessons for gifted students (Yıldız, 2018).

As a result of the literature review; there is no study in SACs that examines the quality of Turkish education practices, the opinions of teachers and students, and various applications in the teaching process in detail and comprehensively. The aim of this research is to determine the opinions of teachers, students, and applications used by teachers in the teaching process regarding the quality of Turkish education in SACs. For this purpose, answers to the following questions will be sought:

1. What are the opinions of the teachers about the Turkish lesson they have applied in science and art centers?

2. What are the applications of teachers in the Turkish lesson teaching process in science and art centers?

3. What are the views of gifted students regarding the Turkish lesson in science and art centers?

The research is expected to contribute to the development of different native language teaching programs in accordance with the characteristics of gifted students. Also; it is thought that it will create new discussions and solution opportunities on curriculum enrichment, learning-teaching process, strategy, methods and techniques, material creation, learning environment, product, measurement and evaluation, and teacher competencies.

## Method

### Research Model

The case study which is one of the qualitative research designs, was used for the study. In the case study, one or more cases are investigated in-depth (Yıldırım & Şimşek, 2016). This design has multiple states and multiple analysis units. Each situation can be studied by dividing it into several sub-units. Embedded-multiple

case design was used in this research. The cases discussed are Turkish education practices in SACs. In the research, analysis units are teachers and students.

**Study Group**

In this study, criterion sampling was used, in which the researcher used his own judgment about whom to choose and sampled the ones most suitable for the purpose of the research (Balcı, 2011). The sampling criteria were that teachers had worked at MoNE for at least 8 years and worked at SACs for at least 2 years. The sampling criteria for the students was that there were AoIT students who had taken Turkish lessons at the SACs for at least 2 years.

In the research, 19 teachers who had seniority of 8 years or more in the MoNE and who have been teaching Turkish in SACs for two years were interviewed. In addition, 29 students who have been taking Turkish lessons in the same institutions for two years and studying in AoIT programs (awareness of individual talents) have been interviewed. The characteristics of the teachers are given in Table 1.

**Table 1.** Characteristics of the teachers

| Characteristics of the teachers | | f |
|---|---|---|
| **Gender** | Male | 11 |
| | Female | 8 |
| **Age** | 26-30 | 2 |
| | 31-35 | 11 |
| | 36-40 | 4 |
| | 41-45 | 1 |
| | 46 and above | 1 |
| **Professional Experience (year)** | 6-10 | 5 |
| | 11-15 | 10 |
| | 16-20 | 2 |
| | Above 20 | 2 |
| **Field of study** | Turkish | 11 |
| | Turkish language and literature | 8 |
| **Educational status** | Bachelor's degree | 6 |
| | Master's degree | 12 |
| | PhD | 1 |
| **In-service training on gifted** | Yes | 12 |
| | No | 7 |
| **Courses, seminars, workshops etc. activities related to gifted** | Yes | 17 |
| | No | 2 |

According to Table 1, 11 teachers are male and 8 teachers are female. The seniority of teachers in the profession is mostly between 11-15 years. It is seen that teachers are mostly in the age range of 31-35. 11 of them are Turkish teachers and 8 of them are teachers of Turkish Language and Literature. 6 of the teachers have a bachelor's degree, 12 of them have a master's degree and 1 of them has a doctoral degree. Twelve of the teachers stated that they received in-service training regarding gifted students. Seventeen of the teachers stated that they participated in activities such as courses, seminars, and workshops about gifted children. Two volunteer teachers were selected from 19 teachers for lesson observation. In accordance with the purposeful sampling, the selected teachers teach Turkish lessons for 10 years or more in AoIT groups in SACs. One of the teachers is male and the other one is female. The characteristics of the students are shown in table 2.

**Table 1**. Students' characteristics

| Students' characteristics | | f |
|---|---|---|
| **Gender** | Male | 16 |
| | Female | 13 |
| **Grade** | 5 | 4 |
| | 6 | 14 |
| | 7 | 7 |
| | 8 | 4 |
| **SACs Program** | AoIT 1 | 16 |
| | AoIT 2 | 9 |
| | AoIT 3 | 4 |

According to Table 2, 16 of the students participating in the research are boys and 13 are girls. Four of the students study in 5th grade, 14 students are in 6th grade, 7 students are in 7th grade and 4

students are in 8th grade. Sixteen of the students are in AoIT 1, 9 students are in AoIT 2 and 4 students are in AoIT 3 program.

**Data Collection Tools**

**Interview:** During the preparation of interview forms, relevant literature reviews and research questions were taken into consideration (Emir, 2017; Sak, 2017; Yalçın, 2018; Yıldız, 2013). Semi-structured teacher and student interview forms were used in the research. The teacher interview form included 8 open-ended questions. Some of the questions in the teacher interview form are as follows: "How / what kind of program do you implement for students?", "What kinds of products are produced in your lessons?". There are 4 open-ended questions in the student interview form. One of the questions in the student interview form is as follows: "How would you evaluate the Turkish education provided in the science and art center? If you wanted a different education, what would you like to change? Why is that?"

A pilot application was carried out during the creation of interview forms. After the pilot implementation, arrangements were made in the interview forms. Because some of the questions did not serve the purpose, the questions were too long and the number of questions was too high, the questions were shortened and rewritten. In order to ensure the content validity of the interview forms, the opinions of four field experts from the Turkish education departments of different universities were consulted and the forms were finalized.

**Observation:** In the research, lesson observations were made to examine the applications of teachers in-depth during their teaching process. While preparing the semi-structured observation form, the relevant literature was examined (Clark, 2012; Emir, 2017; Sak, 2017; Şahin, 2015a; Tomlinson, 2014; Tortop, 2015) and codes were created. Accordingly, the elements that should be included in the differentiated and enriched course design for gifted students were added to the form. Two Turkish teachers working in SACs were observed separately for two hours as a pilot implementation. The prepared observation form took its final form after taking the opinions of three field experts from the Turkish education department of the university. The codes are for determining the dimensions that should be considered first when making observations. Explanations about the codes are given below:

**Event content**

**Interdisciplinarity:** The content of the event should contain interdisciplinary links. Content should be structured around basic concepts.

**Complexity:** Content should include as much abstract concepts, theories and interdisciplinary connections as possible, and high-level thinking skills.

**Abstraction:** It should be ensured not only to teach the facts, but to reach generalizations and theories from information.

**Advanced content:** It should go beyond the normal curriculum and include different and high-level topics.

**Learning-teaching process**

**Different methods and techniques:** Different methods and techniques should be included according to students' interests and learning styles.

**Higher-order thinking:** Students should be encouraged to use high-level cognitive skills such as analysis, synthesis and evaluation. Questions that require critical and creative thinking should be asked.

**Open-ended:** Problems with more than one correct answer should be included. Students should be encouraged to think in plurality.

**The pace of teaching:** Your lecturing should be reduced, repetitions should be avoided, more thinking and discussion should be included.

**Learning environment**

**Student-centered:** The learning environment should be student-centered. Students should make most of the talks.

**Openness:** Different ideas and behaviors should be welcome in the learning environment.

**Constructive criticism:** Constructive evaluations should be made in the learning environment, not judgment.

**Product**

**Diversity:** Students should be able to show what they have learned with different products.

**Synthesis product:** Products should be simple, summary or in the form of a synthesis product with features such as article, development, merging, differentiation, not imitation.

**Multiple evaluation:** Products should be evaluated with various measurement tools and evaluation methods. The qualities sought in real products should be used as criteria.

The determined codes were determined as "Yes", "No" and "Partially" during the observation and notes were taken. For example, if the course content contains interdisciplinary links but this link is weak, it was coded as "partially".

**Documentation:** SACs Turkish course book of activities, activity plans, activities prepared by teachers, class photos, annual plans, researcher's field and observation notes, photos of student products, regulations and instructions related to special education were examined as a document in the research, and they were associated with the findings obtained from the interview and observation. In addition, reflective journaling kept by the students in the lessons observed in the research were also used.

**Data Collection Processes**

Permission was obtained from the Ministry of National Education to collect the data. The researcher made face-to-face interviews with teachers and students according to pre-determined hours. Approval was obtained from teachers and parents for interviews and observations. Interviews with teachers took approximately 30-50 minutes. Interviews with students lasted between 5-20 minutes. It was observed that the teachers and students interviewed were sincere and comfortable in their answers. The interviews were completed in the 2017-2018 academic year. Course observations were made in AoIT 1 groups in the second semester of the 2017-2018 academic year. Two teachers determined for lesson observations were observed in ten activities / twenty lessons in total. The researcher was an external observer in the lesson observation. Data were recorded without directly interacting with teachers and students in the activities. Video recording was not allowed during the observation process. The researcher took detailed notes using the semi-structured observation form.

**Analysis of Data**

Qualitative data obtained in the study were analyzed using content analysis and descriptive analysis methods. First of all, the recordings of the interview were listened to and written as a Word document. Students' diaries were also transferred to Word. Code list and themes were created by the researcher, and then the same data set was given to another researcher and the researcher was asked to encode the data. By comparing the coding similarities and differences, 85% coding percentage has been reached. This ratio was calculated using by Miles and Huberman formula (1994). (Reliability: Number of Agreements / Number of Agreements + Disagreements). Accordingly, it can be stated that the analysis process is reliable. (Yıldırım & Şimşek, 2016). Since the course observation notes were in text format, they were directly included in the data analysis process. The data obtained from the observations were

analyzed by descriptive analysis. While coding about behaviors in the observation process, it was aimed to benefit from the data obtained through document analysis. In other words, the data obtained through document analysis were used as a tool to obtain reliable data in the research. Teachers were coded as T1, T2, T3… T19, students G1, G2, G3… G29.

**Validity and Reliability**

Believability (Internal validity): The researcher should be in a long-term interaction with the participants (Creswell, 2013). In this study, because the researcher is a SAC teacher, he interacted with the participant teachers and students for a long time, creating an environment of trust between the researcher and the participants.

In this research, methodological diversification (Merriam, 1995) was used by using interview, observation, and document review. In addition, the data source was diversified by collecting data from teachers and students. The data were analyzed by another researcher and the researcher diversification was carried out. Interview and observation findings and document analysis were presented to three experts from Sakarya University Turkish Education Department. The results obtained in the study are summarized to the participants and approval is obtained from the participants that they reflect them correctly.

Transferability (External validity): In this research, direct quotations from participant interviews and observation notes were made for transferability, and the findings were described in detail. Participants were selected by purposeful sampling method.

Consistency (Internal Reliability): In the research, all interviews and observations were made with a similar approach, detailed information was given about when, how and where the data were collected.

Confirmability (External reliability): In the research, data collection tools, raw data, codings and themes made during the data analysis phase were examined by three associate professor from Sakarya University Turkish Education Department. The interviews were recorded with a voice recorder and these were transcribed. The method applied in the research is explained in detail.

## Findings

**Findings from Teacher Interviews**

Teachers' opinions were evaluated on 5 themes: enriched program, content, teaching process, product and measurement tools and evaluation methods. These themes are described below.

Enriched Program: The teachers stated that they implemented the Turkish activity book and framework program proposed by the Ministry of Education at the SAC, they prepared their own enriched activities, and they applied the activities by differentiating them according to their readiness, interest and needs of the students. Sub-themes are briefly described below.

*SACs Turkish activity book and frame program:* 16 of the teachers stated that they used SACs Turkish activity book and frame program. T7 expressed his view as follows:

*"I use the program that the national education gives us as a guide, I adapt the activities by making some minor changes according to the interests and abilities of the students, their learning styles, for example, I conduct activities with drama in younger age groups, and I do writing and painting works with groups who love to write..." (T7)*

*Enriched activities of teachers:* 16 of the teachers stated that they prepared and implemented their own activities.

*Application by differentiating existing activities*: 10 of the teachers stated that they applied the activities by differentiating them according to the students' readiness, interest and learning styles. As an example, the opinion of T13 is as follows:

*"…if a student is bored with the activity, we continue the course with activities that are suitable for his level and may be of interest. For example, we can ask him to create a bird with origami art and then write a poem for this creature…"*

Content: Teachers' opinions on content were evaluated in 5 sub-themes: language skills (f=44), values (f=6), literature (f=4), drama (f=3) and scientific research methods (f=2). Opinions about these sub-themes are as follows.

*Language skills:* It includes speaking (f=15), writing (f=10), reading (f=10), listening (f=8) and grammar (f=1) categories. The teachers mostly expressed their views on speaking skills, emphasizing that students may have problems in socializing and expressing themselves, and speaking skills can be increased by means of speaking activities. Teachers emphasized the importance of creative writing and the need to focus on creative writing in order to develop creativity in writing skills. One of the views is as follows:

*"In a writing activity, how we can improve and what we can add to the existing study needs to be discussed, so creativity in writing must come forward, we also know that if creative activities are designed, these children can produce very beautiful products."(T10)*

*Values:* It consists language awareness (f=3), values education (f=2) and national culture (f=1). Teachers emphasized that it is important for gifted students with high potential to reach important positions in the society to have language consciousness, to know national spiritual values and national cultural elements. The opinion of T6 on this issue is as follows:

"*Our national and spiritual values, values education and national literature are important. It is important that students have language awareness. We should emphasize these issues in all lessons."*

*Literature:* There are literary genres (f=2), national literature (f=1) and literary history (f=1). The teachers stated that gifted students should have comprehensive knowledge of literature along with their basic language skills. T13's statement is as follows:

*"First of all, students should know the subjects based on comprehension, interpretation, the grammar subjects, and also learn scientific research methods and techniques. In addition, teaching or doing activities related to literature will increase the proficiency of students to an appropriate level."*

*Drama:* Some of the teachers stated that drama should be given and practiced more as a discipline for gifted students with poor social skills. One of the opinions of the teachers is as follows*:*

*"I think that the subjects that will help students to socialize should be emphasized, the activities related to speaking skills should be given great importance because these students' social skills are weak and drama should be emphasized." (T5)*

*Scientific research methods:* Two of the teachers emphasized that students should have scientific research skills in disciplinary matters.

Teaching Process: It is important to use different methods, techniques and materials to enrich the teaching process. Teachers' views on the teaching process were evaluated in 3 sub-themes. These sub-themes are described below.

*Methods*: It consist question-answer (f=13), demonstration (f=9), instruction (f=8), discussion (f=6), project / research (f =4), cooperative learning (f=3), mixed method (f=4), problem solving (f=2), case study (f=1) and trip-observation (f=1) categories. Teachers stated that they use various methods together according to the content of the activity and the characteristics of the students. The opinion of T2 is as follows:

*"We love mind maps, we use brainstorming, discussion and sometimes interview method. In other words, we use the methods that children are always involved in. We are going out, we are interviewing with people on the streets together, we are making our puppets, we are performing plays…"*

*Techniques*: Teachers emphasized that they benefited from various techniques such as brainstorming (f=14), drama (f=7), group work (f=5), creative writing (f=4), educational plays (f=3), role playing (f=3), dramatization (f=2), debate (f=2), concept maps (f=2), interview (f=2), first person interviews (f=2), buzz groups (f=1), fishbone technique (f=1), micro teaching (f=1), storytelling (f=1) and mind map (f=1). Statement of Ö13 about the techniques is as follows:

*"One of the techniques we use most is brainstorming. We use dramatization frequently, and we use direct instruction as well as question and answer methods to give information about the subject." (T13)*

*Materials*: Teachers' opinions about the materials used in their lessons were evaluated in three categories as "visual materials" (f=64), "visual and audio materials" (f=37) and "audio materials" (f=5). The teachers stated that they used books, authentic materials, Hacivat Karagöz set, verbal intelligence games, dictionaries, puppets, magazines, posters, pictures and costumes as visual materials. Computer, animation, smart board, camera, educational video, web 2.0 tools and documentaries are expressed as audiovisual materials. It is stated that radio, music, poems and sound recording are used as audio materials. In addition, teachers stated that they need technology-based, visually rich and game-based materials more. One of the opinions of the teachers is as follows:

*"I use our activity book, apart from that, we design puppet books, use authentic materials, what can these be, for example, sandals ..." (T3)*

Output: The teachers stated that gifted students created various synthesis products in the lessons. The teachers emphasized that they set the students free about the product and that students created the product they wanted according to their abilities and interests. The products created by students are mostly stories (f=15), essays (f=12), poetry (f=12) and fairy tales (f=8). In addition, free style text, articles, puppets, comics, interviews, pictures, games, songs, Karagöz-Hacivat, cartoons, short films, drama shows and posters are other products created by students.

Measurement Tools and Evaluation Methods: Eight categories related to measurement tools and evaluation methods have been created. These are portfolio (f=19), open-ended questions (f=11), self-

assessment form (f=10), peer assessment form (f=10) basic language skills assessment forms (f=8), graded scoring keys (f=6), observation forms (f=4) and checklists (f=2). The teachers emphasized that they made prepatation, process and final product evaluations and they also care about portfolios. They stated that they assessed students during the activity and at the end of the lesson with open-ended questions for analysis, synthesis and evaluation. A statement of one of the teachers is as follows:

*"... my main assessment is product-oriented, how much it produces, what kind of writing it is, I especially identify them, and I am also process-oriented most of the time. I also apply self-evaluation, peer evaluation, written expression evaluation scales." (T12)*

**Findings from course observations**

The findings are presented in the order of the codes in the observation form and examples from the observation notes are given.

Event content: It has been observed that all activities implemented by Teacher A are partially abstract and complex, include interdisciplinary links, and advanced content is partially given in the activities. The example of interdisciplinary connection that Teacher A made at an event related to the situation and event stories is as follows:

"*A connection was established with history and sociology. The rescript of Gülhane and the changes in the Ottoman were mentioned."* (Observation Notes, 31.03.2018)

It was observed that the activities implemented by Teacher B showed complexity partially, most of them contained interdisciplinary connections and featured abstraction, and some advanced content was given in the activities. The example of the interdisciplinary connection that Teacher B made at the poetry activity is as follows:

*"The relationship with visual arts was established. Images and metaphors in poetry were pictured." (Observation Notes, 31.03.2018).*

Learning-teaching process: It was observed that teacher A used high-level thinking skills and open-ended problems partly, and rarely includes different methods and techniques in activities. It was observed that the pace of education was paid attention without falling again and boring the students. An example from the observation notes is as follows:

*"It is stated that a fairy tale will be written with the SCAMPER technique. Each student chose a fairy tale. The application of the technique is illustrated with an example. The students created a new fairy tale with the technique." (Observation Notes, 07.04.2018).*

It was observed that open-ended problems and different methods and techniques during activities were partially included. In addition, it was observed that the speed of teaching was arranged in such a way that the students were not bored in activities, and that most of the activities included higher-level thinking. One of the observation notes is as follows:

*"Müşfik Kenter's video was watched. Samples were read from the book "100 Things to Do Before You Die". Students were lead to think with open-ended questions. "Have you taken any risks in your life?" The question was discussed. Question-answer, creative thinking and critical thinking methods were used."* (Observation Notes, 07.04.2018)

Learning environment: It was observed that both teachers conducted the lessons in a democratic and free environment, implemented the activities in a student-centered manner, and made evaluations in a constructive way.

Output: In teacher A's activities, it was observed that synthesized products came out, product variety was low, and multiple evaluation methods were included in product evaluation process. One of the observation notes is as follows*:*

*"Students made the stage and costume design and the play was performed. Drama observation form was used. In addition, self-evaluation was made." (Observation Notes, 14.04.2018).*

It was observed that mostly synthesized products came out in teacher B's activities, their product variety was low, and they used multiple evaluation methods in product evaluations.

**Findings from Student Opinions**

Students' views were evaluated on four themes: content (f=20), learning-teaching process (f=45), learning environment (f=6) and product (f=18). Themes are described below.

Content: It consists of different (f=8), rich (f=8), interdisciplinary (f=2) and challenging (f=2) categories. The students emphasized that they found the content different and rich. They also stated that the activities are intertwined and challenging with different disciplines. A statement from one of the students is as follows:

*"… I have seen many benefits in gaining some communication skills. I think it made me more sociable, I got more interested in books here, I got to know some writers and literary genres." (G15)*

Learning and teaching process: The students made evaluations about the teaching-learning process at most. The categories in the theme are fun-game based (f = 17), different methods (f = 13), applied (f = 6), efficient (f = 3), creative (f = 3) and accelerated (f = 3). The students stated that they do the activities with different methods and practiced. One of the students' views is as follows:

*"Collaboration with various other courses is done in Turkish course here. I am having a lot of fun working on animating stories. I like voice acting on stage in shadow play studies." (G2)*

Learning environment: It consists student-centered (f=4), free (f=1) and social (f=1) categories. The students emphasized that they lead and direct the activities themselves and express their thoughts comfortably. The statement of one of the students is as follows:

"… in contrast to the times *at school, Turkish lesson is taught here as practical and entertaining. Various activities such as interpreting what we read, finding the main thoughts of the videos we watch, improving our speaking skills, reading and writing essays are done by us."* (G9)

Output: It consist developing basic language skills (f=7), output according to student interest (f=4), developing thinking skills (f=3), gaining reading habit (f=1), developing communication skills (f=1), solving real life problems (f=1) and developing positive attitude to the course (f=1) categories. Students stated that they generally produce products related to their native language skills in the lessons. The statement of one of the students is as follows:

*"…Especially activities on writing are fun. Differences such as product creation and gamification make this place more interesting." (G5).*

**Findings from reflective journaling of students**

After the lessons observed in the research, students were asked to write a journal about the activities done that day. Expressions in reflective student diaries were evaluated on two themes: quality (f = 110) and diversity (f = 51).

Quality: It reflects how students describe the lessons and how they feel after the lessons. There are creative (f=51), fun (f=28), beautiful (f=16), informative (f=7), compelling (f=4), sincere (f=2), efficient (f=1) and impressive (f=1) categories in the theme of quality. Examples are as follows:

*"Today's lesson was very creative. Because we created our own newspaper. Lessons are always fun and more sincere than other lessons, so I feel cheerful.* (G4, Teacher B's lesson-17.03.2018).

*"Today's lesson has changed my mind about the topic prejudice to a great extent."* (G5, Teacher B's lesson-07.04.2018)

Diversity: It reflects the subjects that students find unusual and interesting in the activities and the different aspects they find in the lessons. Categories in the theme; creative writing (f=12), video watching and interpretation (f=8), idioms and proverbs game (f=7), fairy tale narration (f=6), debate (f=6) presentation (f=3), newspaper work (f=3), digital book writing (f = 2), puzzle preparation (f=2), diction study (f=1) and cartoon animation (f=1). Some examples are as follows:

*"We tried rhymes to speak beautifully and fluently, to speak the words accurately. It's fun, beautiful, and a little difficult." (G1,* Teacher A's lesson-14.04.2018*).*

*"We made the cartoons talk and go on arguing in the debate activity, it was very fun."* (G6, Teacher A's lesson-24.03.2018)

## Discussion, Conclusion and Suggestions

In this study, the quality of Turkish education applied to gifted students in science and art centers was examined through qualitative data analysis method with their experiences, teacher views, student views and teachers' practices in the teaching process.

Teachers' opinions were examined on 5 themes: enriched program, content, teaching process, output, measurement tools and evaluation methods. The teachers explained that they prepared activities according to the students' characteristics and also they applied the activities by changing and differentiating them.

As a matter of fact, in the study of Yıldız (2018), it was determined that Turkish teachers mostly used the activity book in science and art centers and they also used the materials they prepared. In various studies, it was found out that differentiated native language teaching develops high level thinking skills, creativity and native language skills of the gifted students (Akça-Üşenti, 2013; Bozca-İşlekeller, 2017; Feng, Vantassel-Baska, Quek, Bai & O'Neill, 2004; Karadağ, 2010; Özbey, Çetinkaya, Demir, Dolaş & Tereci, 2017). It is important that teachers plan their lessons according to various differentiation strategies. Teachers of gifted students should know the basic characteristics of gifted students and individual learning differences, they should know how to prepare differentiated teaching plans (Sak, 2017; Tomlinson, 2014; VanTassel-Baska & Johnsen, 2007). In this study, it was observed that teachers prepared enriched activities and they made differentiations according to the characteristics of the students. Accordingly, it can be said that teachers have knowledge about differentiation, changing, and enrichment. Researcher notes and documents also support this result. While talking about language skills; teachers stated that students may have problems especially in socializing and expressing themselves and that students' proficiency can be improved by language activities. Activities about

improving speaking skills can be effective in preventing social-emotional problems (Çitil & Ataman, 2018; Koçal, Kanar, Ermiş & Pınar Kanar, 2009; Peterson, Duncan & Canady, 2009) that gifted students may experience as a result of loneliness and isolation. Teachers also emphasized the importance of creative writing in developing creativity and drew attention to the importance of creative writing activities. Studies also support this (Arı, 2015; Olthouse, 2012; Özdemir, 2010; Saluk & Pilav, 2018). In addition, it has been observed that drama attracted students' attention both as a discipline and as a method. In this case, it would be beneficial for teachers to use drama more in enriching activities. Also, teaching research methods is important in terms of increasing students' research skills, enthusiasm, and motivation. (Sak, 2017). However, few teachers have expressed their views on research methods.

The teaching process theme was examined in 3 sub-themes as methods, techniques and materials. In the research, it was found out that different methods and techniques were involved in activities and teachers enriched the process. It is a necessity to use a wide variety of methods and techniques for students with different features and for students who can get bored quickly in lessons. Gifted students participate actively in learning processes that are appropriate for their own learning styles (Tortop, 2015). In his study, Soares (2009) found that the reading circle method provides gifted sixth grader students a forum where they can practice multiple perspectives, a context, critical thinking, and reasoning skills to try new subjectivities and produce counter texts. The teaching process should be enriched with seminars, independent work, olympics, field trips, conferences, multidisciplinary and interdisciplinary projects (Clark, 2012; Sak, 2017; Şahin, 2015b). Teachers did not mention instructional strategies / methods such as agendas, reading circles, stations, learning contracts and this may be as a result of their not using them frequently.

In the research, it was found out that teachers use and prepare a wide variety of materials, and also they need more visual, technological, and game-based materials. In the study of Yıldız (2018), Turkish teachers at the science and art center emphasized that the materials should be visually rich, technology-based, challenging and easy to access. Jordan (2015) developed an online teaching environment that teachers can use to enrich the language education program of gifted students, and the results have been positive. A digital application developed to overcome the difficulties faced by gifted students in reading and to increase their motivation has positively affected the reading attitude of students (Gunter & Kenny (2012). Accordingly, preparing the technology and game-based materials needed by teachers in cooperation with academicians and teaching staff and making them available to teachers will make a great contribution to enriching the course.

When measurement tools and assessment methods are considered, teachers stated that they use a wide variety of measurement tools and assessment methods. They emphasized that student portfolios are especially important in process and product evaluation. They also stated that they made assessment to determine the readiness of students before the teaching process.

While differentiating and arranging the lessons for gifted students, the readiness of the students should be determined first, and then, the content, teaching process and product should be changed accordingly (Tomlinson, 2014; Tortop, 2015). The student portfolio allows students to interpret their own work, monitor their progress and lead their future learning (Güneş, 2016). In the interviews, teachers stated that students created various types of products, and literary products were a more common type. It is very important that the products prepared by gifted students must be synthesis products in which they use high level cognitive skills (Sak & Maker, 2004; Sak, 2017; Tortop, 2015). The

teachers emphasized that they set the students free while creating the product, thus students perform the learning outcomes however they like and synthesis products come out as a result.

When the observation results were evaluated, it was seen that the observed teachers need to improve the activity content in terms of complexity and abstraction, they should increase the advanced content in the program, and they should give more place to the methods and techniques that would attract students' interest in the course process. In addition, it can be said that they should use open-ended problems more and there should be more of high-level thinking skills (Clark, 2012; Fraser-Seeto, Howard & Woodcock, 2015, Gagne, 2010; Sak, 2017; Tomlinson, 2014; Tortop, 2015).

In the research, students' opinions were examined in 4 themes as learning-teaching process, learning environment and product. According to the students' opinions, it can be said that Turkish education is carried out in science and art centers in accordance with the principles of differentiation and enrichment. Also in the student diaries, the students described the Turkish lessons in the science and art center as different, creative, and entertaining. Consistent with the results of this research, in some research studies, it is seen that gifted students show a positive attitude towards Turkish lesson in science and art centers; students find drama and creative writing activities as the most beneficial, different, and entertaining activities. It has been determined that the learning environment is described as improving thinking, relaxing, and exciting (Aslan & Doğan, 2016; Hırça, 2013, Okur & Özsoy, 2013).

The findings and results of this research are important in terms of improving Turkish education applied to gifted students and contributing to the differentiation and enrichment studies to be made in the field according to the students' readiness, interests and learning styles. As a result, in this study; it was observed that the teachers who taught the Turkish lesson at SACs applied a differentiated program according to the characteristics of the students and enriched the activities. It was found out that the students had positive opinions about the Turkish courses they had. However, it will be useful to organize training for teachers in cooperation with universities on new methods and techniques to support differentiation and enrichment. It will be beneficial to develop visually rich, technology-based and game-based materials for SACs Turkish lessons. The generalization of this research is limited, it is recommended to conduct similar research with more participants and institutions and different research approaches.

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www.iojes.net

International Online Journal of Educational Sciences

ISSN: 1309-2707

# The Effect of Self-Regulated Learning on Success During Distance Education

*Research Article*

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**To cite this article:** Duzgun, S., & Basaran, M. (2021). The effect of self-regulated learning on success during distance education**,** *International Online Journal of Educational Sciences, 13* (5), 1577-1589.

ARTICLE INFO

*Article History*:

Received: 09.09.2021

Available online: 27.10.2021

ABSTRACT

The aim of this study is to determine the self-regulated learning skills of primary school students in the distance education process of the Covid-19 pandemic, according to some variables. In this study, relational scanning, one of the quantitative research methods, was used. 240 students were randomly selected by cluster sampling method. It was observed that the students' academic success in distance education is mostly respectively by success of students in face-to-face education, level of self-regulated learning, adequacy of communication tools and infrastructure used in distance education. It was observed that attitudes of students towards the distance education process is affected respectively by adequacy of communication tools and infrastructure used in distance education, the participation of the family in the process, the number of daily lessons in distance education. In the study, it was observed that the most important factor predicting success in distance education was success in face-to-face education and then self-regulated learning, while the effect of other variables was quite low.



**Keywords:**
Covid-19, distance education, pandemic, self-regulated learning

## Introduction

The New Type of Corona Virus (2019-nCoV) with its widespread use, which emerged in the People's Republic of China at the end of 2019, spread all over the world in a short time. Therefore, a pandemic was declared by the World Health Organization (WHO) in March 2020. WHO has recommended that schools be suspended as part of the measures to be taken against the epidemic. Many countries have suspended their schools considering their own conditions. As of March 23, 2020, the Ministry of National Education (MoNE) in Turkey has closed schools at all levels to face-to-face education and switched to distance education. Since

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DOI: https://doi.org/10.15345/iojes.2021.05.017

the Covid-19 pandemic has changed daily life very quickly and unexpectedly, almost all people and many institutions have experienced various difficulties. Educational institutions lead them. The reason of it is that the students suddenly found themselves listening to lessons in front of the computer or TV screens in the rooms of their homes while the children were studying at schools.

Although distance education does not differ in terms of gains, it is quite different from face-to-face training in terms of materials used in the process, planning the teaching process, physical environments in which students attend classes and classroom interaction, etc. It can be said that the source of the problems encountered in the distance education depends on the quality of the electronic devices used by the student, the internet infrastructure used, the educational and social support provided by the family to the student in the process, as well as the arrangement of the physical environment at home and the adaptation of teachers to distance education. One of the most important problems encountered in distance education and arising from the student is that the student must control his/her own educational environment and process instead of the teacher. It brings to mind self-regulation skill (Bakioğlu and Çevik, 2020; Dikmen and Bahçeci, 2020; Keskin and Özer Kaya, 2020).

Studies on self-regulation skills began in the mid-1980s in order to find an answer to the question of "How can students become managers of their own learning processes?". In the 1990s, studies on the concept spread to a wider area, and different aspects of self-regulation such as self-regulation, self-control, and self-management began to be addressed (Boekaerts et al. 1999).

Zimmerman and Schunk (1989) define self-regulation as the thoughts, feelings, and actions that students form systematically towards achieving their goals. According to Zimmerman (2001), self-regulation skill is determined by 3 main factors: Self, behaviour, and environment. Individuals with advanced self-regulation skills will emerge by their harmonious interaction. Winne (1995) defines self-regulation as a constructive and self-directed process by its nature. According to Zimmerman (2002), the model of self-regulation is based on a social cognitive perspective and becomes a performance as planning the individual's emotions, thoughts, and behaviours on learning.

Moving from what has been said so far, it can be said that the model of self-regulation is affected by the social-cognitive learning theory and is closely related to self-confidence, motivation, self-regulation, and self-evaluation of students. Naturally, it can be stated that immediate environment of students (parents, teachers, friends, etc.) are of importance in developing self-regulation skills. In this context, it can be said that self-regulation skill has the potential to have influence on the academic success of students who are locked out of their homes with the Covid-19 pandemic in the distance education process (Eker, 2014).

**Purpose of the Study**

The aim of this study is determine, at the level of primary school fourth grade, success in face-to-face education, level of self-regulation, the amount of communication they establish in lessons with their classmates in distance education, average number of lessons per day, adequacy of communication tools and infrastructure, the suitability of the physical environment where they listen to the lessons in the distance education process, involvement of the family in the process, classroom teacher's competence in distance education, and his/her prediction of students' academic success in distance education and their attitudes towards distance education.

## Method

In this study, relational scanning, one of the quantitative research methods, was used. Relational scanning is among the scanning patterns among quantitative study methods. In this design, the existence and

degree of the relationship between multiple situations are examined without external intervention (Creswell, 2002)

**Study Group**

In the study, fourth grade students attending private and public primary schools in Istanbul province in the spring semester of the 2019-2020 academic year were determined as the study population. The study group was determined using cluster sampling. In the random cluster sampling, the probability for selection of each group in the universe for sampling is the same. In other words, clusters are chosen by chance from the universe (Karasar, 2013). In the study, six schools were selected, three from each district. Four of these schools are public primary schools and two are private primary schools. Eight of a total of 30 fourth grade classes in these schools (six of which are from public schools and two from private schools) were chosen randomly. A total of 240 students having their education in the selected classes were included in the sample.

**Measurement Tools**

In the study, measurement tools, which were developed by the researchers, were used to determine to what extent and which factors affect academic success and attitude towards courses in the distance education process. The measurement tool applied to students consists of six parts:

In the first part, a Likert-type triple rating scale consisting of 12 items developed by the researchers was used to determine attitudes of the students towards the distance education process. Content validity of the scale was ensured by obtaining the opinions of three field experts who had their doctorate in classroom education. Factor analysis was made for structural validity. In this analysis, a single factor that explains 67.37% of the total variance emerged and it was observed that the factor loads of all 12 items were more than 0.30. In the test conducted to ensure the reliability of the scale, the Cronbach Alpha coefficient was found to be 0.88.

In the second part, the measurement tool developed by Vandevelde et al. (2013) and adapted to Turkish by Doğan (2015) was used in order to determine self-regulation skills of students. The scale consists of 32 items. In the factor analysis made for structural validity, three factors that explain 77.00% of the total variance emerged and it was seen that the factor loads of all items were more than 0.30. In the test conducted to ensure the reliability of the scale, the Cronbach Alpha coefficient was found to be 0.97.

In the third part, Likert-type triple rating scale developed in order to determine the amount of communication students establish with their classmates during the distance education process was used. The scale consists of 8 items. Content validity of the scale was ensured by obtaining the opinions of three field experts who had their doctorate in classroom education. Factor analysis was made for structural validity. In this analysis, a single factor that explains 86.75% of the total variance emerged and it was observed that the factor loads of all 8 items were more than 0.30. In the test conducted to ensure the reliability of the scale, the Cronbach Alpha coefficient was found to be 0.89.

In the fourth part, Likert-type triple rating scale developed in order to determine the adequacy of communication tools and infrastructure was used. The scale consists of 12 items. Content validity of the scale was ensured by obtaining the opinions of three field experts. Factor analysis was made for structural validity. In this analysis, a single factor that explains 76.75% of the total variance emerged and it was observed that the factor loads of all 12 items were more than 0.30. In the test conducted to ensure the reliability of the scale, the Cronbach Alpha coefficient was found to be 0.91.

In the fifth part, the Likert-type triple rating scale developed in order to determine the suitability of the physical environment in which students listen to the lessons in the distance education process was used. The scale consists of 15 items. Content validity of the scale was ensured by obtaining the opinions of three field experts. Factor analysis was made for structural validity. In this analysis, a single factor that explains 56.17%

of the total variance emerged and it was observed that the factor loads of all 15 items were more than 0.30. In the test conducted to ensure the reliability of the scale, the Cronbach Alpha coefficient was found to be 0.65.

In the sixth part, the Likert-type triple rating scale developed in order to determine the level of academic support that family of the students provide to the students in the distance education process, was used. The scale consists of 10 items. Content validity of the scale was ensured by obtaining the opinions of three field experts. Factor analysis was made for structural validity. In this analysis, a single factor that explains 86.47% of the total variance emerged and it was observed that the factor loads of all 10 items were more than 0.30. In the test conducted to ensure the reliability of the scale, the Cronbach Alpha coefficient was found to be 0.85.

It was requested from the classroom teachers of the classes where the application was carried out to indicate the academic success of their students in their classes, both in face-to-face education and in distance education, excluding physical activities and games, visual arts, music, English, and religious culture and ethics lessons, and the average number of lessons the students in their classes teach in distance education. It was requested from these teachers also to answer a 19-item five-point Likert-type scale in order to developed by the researchers to determine to what extent they felt competent in using technological tools in distance education and in preparing and presenting course materials in distance education. Content validity of this scale was ensured by obtaining the opinions of three field experts, one with a doctorate in classroom education and two in the field of Computer Education and Instructional Technologies. Factor analysis was made for structural validity. In this analysis, two factors that explain 66.75% of the total variance (using technological tools efficiently in the distance education process and making presentations in distance education) emerged. In addition, it was seen that the factor loads of all 19 items were more than 0.30. In the test conducted to ensure the reliability of the scale, the Cronbach Alpha coefficient was found to be 0.61.

**Procedure**

All the processes of the study were conducted remotely and electronically under the control of the researchers. In the first stage of the study, classroom teachers filled the parts showing the academic status of their students by entering the numbers of the students in their class in the first part of the measurement tool prepared for them, and the scale developed for how much they felt competent in distance education in the second part. Afterwards, the students included in the sampling filled in the measurement tool prepared for them by entering their class numbers. No time limitation was applied for these applications. The data obtained after these applications were analysed using the SPSS 25.0 software.

**Study Ethics**

Firstly, the classroom teachers who were included in the study were contacted and information was given about the conduct of the study. It was observed that the classroom teachers were voluntary to participate in the research. Through the classroom teachers, families of the students were informed and their consent was obtained. No personal data about the students participating in the study were requested, but a link was added at the end of the applications for the subjects who wanted to leave the study after answering the measurement tools. There were no students or classroom teachers who left the study. Yıldız Technical University Ethics Committee approved the research and the scale used in accordance with scientific ethical rules with its decision dated 19.06.2020 and numbered 73613421-604.01.02.E-2006190272. Permission was obtained from the relevant researchers via e-mail for the scales used in the study and not developed by the researchers.

## Findings

The findings obtained as a result of the applications in this section are given in tables and interpreted.

**Table 1.** Normality tests

| Score type | Tests | |
|---|---|---|
| | **Skewness** | **Kurtosis** |
| Academic Success of students in distance education (ASoSiDE) | -.149 | -1.175 |
| Attitudes of students towards the distance education process (AoSttDEP) | 0.577 | -.519 |
| Success of students in face-to-face education (SoSiFtFE) | -.085 | -.676 |
| Students' level of self-regulation (SLoSR) | -.209 | -.050 |
| The amount of communication students establish with their classmates in lessons (tAoCSEwTCiL) | -.184 | -.389 |
| Adequacy of communication tools and infrastructure used in distance education (AoCTaIuiDE) | 1.113 | ,929 |
| The suitability of the physical environment in which students listen to the lessons in the distance education process (tSotPEiwSLttLitDEP) | ,097 | -.905 |
| Involvement of families in the process (IoFitP) | 1.218 | ,750 |
| The level of teachers finding themselves competent in distance education (tLoTFtCiDE) | -.015 | -.089 |

In Table 1 it is seen that the skewness and kurtosis coefficients for all score distributions vary between -1,175 and +1,218. Since the coefficient of skewness and kurtosis should be between +1.5 and -1.5 in order to decide that the scores obtained in social sciences show normal distribution characteristic (Tabachnick and Fidell, 2007), it can be said that the scores used in the study have normal distribution characteristics.

**Table 2.** The relationship between the factors affecting academic achievement and attitude towards the process in distance education process, success of students in the distance education process and their attitude towards the process

| | | **ASoSiDE** | **AoSttDEP** | **SoSiFtFE** | **SLoSR** | **tAoCSEwTCiL** | **AoCTaIuiDE** | **tSotPEiwSLttLitDEP** | **NoLPDiDE** | **IoFitP** | **tLoTFtCiDE** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ASoSiDE | R | 1 | | | | | | | | | |
| | P | | | | | | | | | | |
| AoSttDEP | R | ,237** | 1 | | | | | | | | |
| | P | ,000 | | | | | | | | | |
| SoSiFtFE | R | ,581** | ,149* | 1 | | | | | | | |
| | P | ,000 | ,020 | | | | | | | | |
| SLoSR | R | ,527** | ,341** | ,247** | 1 | | | | | | |
| | P | ,000 | ,000 | ,000 | | | | | | | |
| tAoCSEwTCiL | R | ,166* | ,181** | ,045 | ,400** | 1 | | | | | |
| | P | ,010 | ,005 | ,489 | ,000 | | | | | | |
| AoCTaIuiDE | R | ,323** | ,445** | ,085 | ,479** | ,278** | 1 | | | | |
| | P | ,000 | ,000 | ,187 | ,000 | ,000 | | | | | |
| tSotPEiwSLttLitDEP | R | ,131* | ,279** | -.003 | ,323** | ,327** | ,250** | 1 | | | |
| | P | ,043 | ,000 | ,962 | ,000 | ,000 | ,000 | | | | |
| NoLPDiDE | R | -,156* | -,162* | ,038 | -.109 | -,167** | -.107 | -.067 | | | |
| | P | ,384 | ,013 | ,556 | ,085 | ,010 | ,098 | ,302 | | | |
| IoFitP | R | ,148* | ,214** | ,097 | ,161* | ,105 | -.006 | ,063 | -.057 | | |
| | P | .021 | .001 | ,133 | ,013 | ,105 | ,932 | ,334 | ,377 | | |
| tLoTFtCiDE | R | ,244** | ,236** | ,042 | ,268** | ,199** | ,191** | ,563** | ,006 | ,085 | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | p | ,000 | ,000 | ,521 | ,000 | ,002 | ,003 | ,000 | ,929 | ,191 |

*$p$>.05; **$p$>.01

According to the Table 2, there is a strong positive relationship between academic success of students in distance education and attitudes of students towards distance education, their success in face-to-face education, their level of self-regulation, the adequacy of communication tools and infrastructure used in distance education, and teachers' self-sufficiency in distance education. In addition, there is a positive and low-level significant relationship between the academic success of students in distance education and the amount of communication students establish with their classmates in distance education lessons, the convenience of the physical environment in which they listen to the lessons in the distance education process, and the family's participation in the process. However, it has been observed that the relationship between the number of daily lessons and academic achievement in distance education is not significant (p> .05).

According to Table 2, there is a strong positive relationship between the attitude of students and the success of students in distance education, the level of self-regulation, the amount of communication they establish with their classmates in distance education lessons, the adequacy of the communication tools and infrastructure used in distance education, the suitability of the physical environment in which they listen to the lessons in distance education, the participation of the family in the process, and the teachers' self-sufficiency in distance education. In addition, there is a positive low-level significant relationship between the attitude of students towards distance education and the success of students in face-to-face education, and a negative and low-level significant relationship between distance education and the number of lessons taught daily (p> .05).

These findings can be interpreted that the success of students in face-to-face education, the level of self-regulation, the amount of communication they establish in lessons, the adequacy of the communication tools and infrastructure, the suitability of the physical environment in which they listen to the lessons in the distance education process, the participation of the family in the process and the proficiency of the classroom teacher in distance education are effective on academic of students' success in distance education and attitude of students towards the distance education process. In addition, it can be said that the average number of lessons per day in distance education has a negative effect on attitudes of students towards distance education.

When the table is examined, it is seen that all of the correlation coefficients of independent variables among themselves are lower than .70. When these findings are evaluated in terms of multiple regression analysis, it can be interpreted that there is no multi-linearity problem among independent variables.

**Table 3.** The prediction of the factors affecting academic achievement and attitude towards the process in distance education

| **Dependent Variable** | **Independent Variables** | **B** | **Stan. Fault** | **β** | **t** | **p** | **Binary R** | **Partial r** |
|---|---|---|---|---|---|---|---|---|
| Success in the distance education process | Constant | -5.190 | ,874 | | 5.936 | ,000 | | |
| | AoSttDEP | .001 | ,018 | ,003 | ,048 | ,962 | ,237 | ,003 |
| | SoSiFtFE | ,623 | ,062 | ,477 | 10.05 | ,000 | ,581 | ,552 |
| | SLoSR | ,064 | ,011 | ,343 | 5.871 | ,000 | ,527 | ,361 |
| | tAoCSEwTCiL | -.017 | ,025 | -.035 | ,679 | ,498 | ,166 | -.045 |
| | AoCTaIuiDE | ,029 | ,014 | ,118 | 2.091 | ,038 | ,323 | ,137 |
| | tSotPEiwSLttLitDEP | -.012 | ,007 | -.093 | 1.606 | ,110 | ,131 | -.105 |
| | NoLPDiDE | -.013 | ,042 | -.015 | ,313 | ,754 | -.056 | -.021 |
| | IoFitP | ,012 | ,014 | ,042 | ,875 | ,382 | ,148 | ,058 |
| | tLoTFtCiDE | ,022 | ,007 | ,165 | 2.965 | ,003 | ,244 | ,192 |

Success in distance education process = -5,190 constant + students' attitudes towards distance education process, 001 + students' success in face-to-face education, 623 + students' level of self-regulation, 064 + amount of communication students establish with their classmates in lessons -, 017 + the adequacy of the communication tools and infrastructure used in distance education, 029 + the suitability of the physical environment where the students listen to the lessons in the distance education process -, 012 + the number of daily lessons in distance education -013 + the participation of the family in the process, 012 + the teachers finding themselves competent in distance education, 022

When binary correlation results in Table 3 are examined, it is seen that there is a significant positive relationship between academic success of students in distance education and attitudes of students towards the distance education process, their success in face-to-face education, the level of self-regulation, the amount of communication they establish with their classmates in lessons, The suitability of the physical environment in which they listen to the lessons in the distance education process, the adequacy of the communication tools and infrastructure, the participation of the family in the process and the level of teachers' finding themselves sufficient in distance education. There is no significant relationship between the number of daily lessons taught in distance education and academic achievement. When standardized regression coefficients are examined, the relative importance of them are the students' academic success in distance education is affected respectively by success of students in face-to-face education, level of self-regulation, adequacy of communication tools and infrastructure used in distance education, the status of teachers in finding themselves competent in distance education, the amount of communication students establish with their classmates in lessons, the number of daily lessons in distance education, the participation of the family in the process, the suitability of the physical environment in which students listen to the lessons in the distance education process, and attitudes of students towards the distance education process. Together, these factors explain 50% of the academic success of students in distance education (R =, 725 and $R^2$ =, 507).

**Table 4.** The prediction of the factors affecting academic achievement and attitude towards the process in distance education

| Dependent Variable | Independent Variables | B | Stan. Fault | β | t | p | Binary r | Partial r |
|---|---|---|---|---|---|---|---|---|
| Attitude towards the distance education process | Constant | 13.482 | 3.25 | | 4.146 | ,000 | | |
| | ASoSiDE | ,011 | ,237 | ,004 | ,048 | ,962 | ,237 | ,003 |
| | SoSiFtFE | ,123 | ,267 | ,032 | ,461 | ,645 | ,149 | ,030 |
| | SLoSR | ,039 | ,042 | ,072 | ,935 | ,351 | ,341 | ,062 |
| | tAoCSEwTCiL | ,047 | ,089 | ,034 | -.531 | ,596 | ,181 | -.035 |
| | AoCTaIuiDE | ,268 | ,048 | ,369 | 5.645 | ,000 | ,445 | ,349 |
| | tSotPEiwSLttLitDEP | ,045 | ,027 | ,121 | 1.687 | ,093 | ,279 | ,111 |
| | NoLPDiDE | -.129 | ,152 | -.049 | -.848 | ,397 | -.162 | -.056 |
| | IoFitP | ,157 | ,048 | ,188 | 3.291 | .001 | ,214 | ,212 |
| | tLoTFtCiDE | ,026 | ,027 | ,068 | ,973 | ,332 | ,236 | ,064 |

Students' attitude towards the distance education process = 13,482 constant + students' academic success in the distance education process, 011 + students' success in face-to-face education ,123 + the level of self-regulation of the students, the amount of communication that 039 + students establish with their classmates in the lessons, 047 + The adequacy of the communication tools and infrastructure used in distance education, 268 + The suitability of the physical environment where the students listen to the lessons in the distance education process, 045 + the number of lessons per day in distance education -129 + family participation in the process, 157 + the situation of teachers finding themselves sufficient in distance education, 026.

When binary correlation results in Table 4 are examined, it is seen that there is a significant positive relationship between attitudes regarding the education process and attitudes of students towards the distance

education process, their success in face-to-face education, the level of self-regulation, the amount of communication they establish with their classmates in lessons, The suitability of the physical environment in which they listen to the lessons in the distance education process, the adequacy of the communication tools and infrastructure, the participation of the family in the process and the level of teachers' finding themselves sufficient in distance education and there is a significant negative relationship from average lessons per day in distant education. According to the standardized regression coefficients, the relative importance are respectively attitudes of students towards the distance education process is affected respectively by adequacy of communication tools and infrastructure used in distance education, the participation of the family in the process, the number of daily lessons in distance education, the amount of communication students establish with their classmates in the lessons, the appropriateness of the physical environment in which students listen to the lessons during the distance education process, students' level of self-regulation, the status of teachers in finding themselves competent in distance education, and academic success of students in distance education. Together, these factors explain 26% (R=,531 ve $R^2$=,265) of the attitude developed by students towards distance education.

## Discussion and Conclusion

According to the results of regression analysis conducted in the study, the relative importance of them are the academic success of students in distance education is affected respectively by success of students in face-to-face education, level of self-regulation, adequacy of communication tools and infrastructure used in distance education, the status of teachers in finding themselves competent in distance education, the amount of communication students establish with their classmates in lessons, the number of daily lessons in distance education, the participation of the family in the process, the suitability of the physical environment in which students listen to the lessons in the distance education process, and attitudes of students towards the distance education process. Together, these factors explain 50% of the academic success of students in distance education (R =, 725 and $R^2$ =, 507).

In the study, it was observed that the most important factor predicting success in distance education was success in face-to-face education and then self-regulation, while the effect of other variables was quite low. In other words, students who are already successful in face-to-face education are also successful in distance education. The predicting power of attitudes of students towards distance education is quite low. This result coincides with the results of many studies in this field (Baş and Şahin, 2012; Garrett, 2002; Gür-Erdoğan and Demir, 2016; İşeri, 2010; Özdemir and Şerbetçi, 2018; Yılmaz and Benli, 2010). However, it was observed that the positive attitudes of the students participating in the study towards distance education were generally low. One reason for the occurrence of this result may be this finding. Higher relations can be found between attitude and academic achievement in studies to be conducted with groups with a high number of students with a high positive attitude towards distance education.

In the regression analysis, it was seen that the other variable that predicted success in distance education after academic success in face-to-face education was self-regulation skills of students. Accordingly, students who have high self-regulation skills, in other words, who can control themselves in line with the purpose of learning in the learning process, are more successful in distance education. This finding coincides with the results of many studies in the field (Effeney et al. 2013; Hee et al. 2019; Pei-Ching et al. 2011; Rahimi and Katal, 2012). The fact that teachers' controlling, motivating, and feedback-providing effect on distance education decreases significantly compared to the classroom environment (Clark, 2020; Ferdousi, 2010; Gelli, 2015) may be effective in the emergence of this result.

In distance education, it becomes much more important for the student to control himself/herself in the education process, to motivate himself/herself and to maintain his/her learning motivation. According to the results of the research (Ellis, 2014), even if a student has high academic abilities and knowledge, academic

success will not be optimal when he/she cannot control himself in the learning process. In other words, time and effort will not be worth the academic success achieved. Especially at primary school level, the effect of self-regulation in distance education on academic achievement is quite high (Wijaya et al. 2020). In this case, it can be said that self-regulation is the easiest skill that will predict academic success and is relatively easy to control and develop in distance education, where the effort and responsibility to be spent for learning by the student increases (Klein, et al. 2020; Kayalı et al. 2020; Harahap, 2020).

Parents and teachers have a great responsibility in gaining self-regulation skills. Social support that families will provide to their children during the distance education process can affect students' self-regulation and learning achievements (Perry et al. 2018). Social support can be an interpersonal relationship where individuals provide assistance to other individuals and assistance can take the form of active participation in the process, emancipation, motivation, providing and liking information or evaluating the process. Social support in distance education can also be obtained from teachers and peers. The quality of the interaction between teachers and students can increase self-regulation (Jarvela and Jarvenoja, 2011).

The development of self-regulation skills of students in distance education depends largely on the efforts of teachers. Teachers should be aware that distance education is an effective tool not only to specialize in specific learning areas, but also to develop self-regulation skills (Sulisworo et al. 2020). In addition, students need guidance from teachers in order to control their own learning in the learning process. For this reason, when planning the learning process, teachers should consider strengthening students' self-regulation skills and clearly emphasize self-regulation skills while managing learning (Cho and Cho 2017). It should not be forgotten that especially in cases where students do not have the willpower and skills in the distance education process (İnan et al. 2017), their academic success will depend on their contribution to self-regulation without neglecting any of the metacognitive, behavioral and motivational dimensions (Dunn and Rakes, 2015; Boekaerts, 1999; Zimmerman, 1990).

Regression analysis was also conducted in the study to determine the relative importance order of the independent variables considered on *the attitude developed by the students towards distance education*. It was observed as the result of this study that attitudes of students towards the distance education process is affected respectively by adequacy of communication tools and infrastructure used in distance education, the participation of the family in the process, the number of daily lessons in distance education, the amount of communication students establish with their classmates in the lessons, the appropriateness of the physical environment in which students listen to the lessons during the distance education process, students' level of self-regulation, the status of teachers in finding themselves competent in distance education, and academic success of students in distance education. Together, these factors explain 26% (R=,531 ve $R^2$=,265) of the attitude developed by students towards distance education. As a result of this analysis, it was seen that the attitude of the students towards the distance education process was largely affected by the communication tools and infrastructure used in distance education, and then the family's participation in the process and the number of daily lessons taught in distance education were effective on the attitude. Other variables whose effects were examined in the study were found to be quite low in predicting student attitudes.

In the emergence of this result, it may be that the infrastructure and technological devices used in distance education are the leading factors that facilitate learning (Broadbent and Poon, 2015; Lim and Richardson, 2016; Todhunter, 2013). When students learn more easily, their positive attitudes towards the learning process also increase. This finding can be interpreted as that as the sound and image quality of the lessons in distance education increases, their learning and therefore their positive attitude towards the process will also increase.

According to the results of the study, it is seen that as the daily hours of the lessons increase, the positive attitudes of students towards distance education decrease. Given that the majority of the students in the study

universe of the research teach as much as the daily lessons in face-to-face education and their attitudes are generally at a medium-low level, it can be said that in distance education, lessons should not be taught as much as in face-to-face education. It can be said that reducing both the number of daily lessons and the duration of the lessons can increase the positive attitudes of the students.

It has been observed that the academic and social support families provide to students in the distance education process have a significant influence on attitudes of students. The study results emphasizing how important it is for the family to participate in the system at all levels of the education process and support students support the conclusion reached in this study (Lesneskie and Block, 2017; Li et al. 2020; Meyer and Mann, 2006; Mo and Singh, 2008; Ünüvar, 2010; Yeoh and Woo, 2013).

One of the interesting results obtained in the study is that the relationship between the amount of communication students establish with their classmates in distance education and their attitudes towards the distance education process is quite low. In fact, distance education not only carries the learning process beyond the physical boundaries of the classroom, but also enables simultaneous and asynchronous online communication between student-student and student-teacher (Wang, 2008). The reason for this result in the study may be the lack of experience of the students and teachers due to the fact that teachers and students are forced to go to distance education due to the pandemic and suddenly. In addition, the physical, social and psychological distance and interfaces used with online environments prevent a sense of community in lessons. Students may then not see themselves as part of a community.

**Limitation and future research**

Teachers may be advised not to focus only on teaching and organizing the digital environment in the distance education environment, but to take measures such as doing group work, providing effective feedback, organizing the number of participants, enabling student-student interaction, etc as if they are a part of a community. It should not be forgotten that students' feeling as part of a community has the potential to affect success, interaction and positive attitude in these learning environments (Haar, 2018; Randolph and Crawford, 2013).

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International Online Journal of Educational Sciences

ISSN: 1309-2707

# Bibliometric Analysis of Published Articles on the Satisfaction Level of Distance Education during the Covid 19 Pandemic

*Research Article*

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**To cite this article:** Bakac, E. (2021). Bibliometric analysis of published articles on the satisfaction level of distance education during the covid 19 pandemic, *International Online Journal of Educational Sciences*, *13*(5), 1590-1602.

ARTICLE INFO

*Article History*:

Received: 16.09.2021

Available online: 03.03.2020

ABSTRACT

During the Covid 19 pandemic, which has a global impact, there has also been a great change in education systems. The level of satisfaction with the distance education applied in this process has had an important effect on the success of the students. The research aims to examine researches that deals with the satisfaction level of distance education applied in the covid 19 process (2019-2021) with bibliometric analysis. In the study, articles (n=107) obtained from the Scopus database were examined. The analysis of the data was carried out with the Vosviewer social network analysis program. At the end of the research, it was found that the articles which examined the level of satisfaction with distance education were generally carried out in the fields of medicine, computer sciences, and social sciences. It was determined that researches are mostly carried out in countries such as the USA, China, Saudi Arabia, England, and Canada. When the data were also analyzed by bibliometric analysis, it was found that the keywords are networked with words such as a pandemic, online learning, distance education, satisfaction, e-learning, higher education, online education concerning the word Covid 19. Also, it was determined that the abstracts of the articles were grouped in four clusters and the collaboration between the authors in three clusters. Since the Covid 19 pandemic continues to show its effect worldwide, it was thought that the number of researches on distance education applied during the pandemic process will increase in the coming years. In this context, it would be appropriate to focus on meta-analysis studies and literature reviews that holistically examine researches. In addition, bibliometric studies examining the quality of distance education in different disciplines, expectations, attitudes, satisfaction and successes of students, faculty members and other stakeholders in the process can also be brought into literature.



**Keywords:**
Covid 19 pandemic, distance education, satisfaction level, bibliometric analysis

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DOI: https://doi.org/10.15345/iojes.2021.05.018

## Introduction

Before 2020, the reason for the implementation of distance education was generally the distance of the students from the education environment or the lack of education opportunities. With the year 2020, schools had to take a break from face-to-face teaching and switch to online distance learning, albeit for a while, in order to slow the spread of the Covid-19 pandemic (MacKenzie, 2020). The Covid-19 pandemic has caused us to give real liquidity to distance education. Different countries have achieved varying degrees of success in this process. Although the functioning of universities in Europe and Turkey during the Covid 19 process is different, it has been observed that the selected methods and service providers are the same. The factors that are important in the transition to the distance education process; qualified manpower, rate of technology literacy, technological infrastructure status, emergency action plan management (Dikmen & Bahçeci, 2020). Distance education, above all, has many advantages such as easy access to course resources, the ability to constantly check students' knowledge, an opportunity for students to instantly test what they have learned, enabling students to learn at their own pace, promoting collaborative learning and an unmediated communication between the lecturer and the learner (Pregowska, Masztalerz, Garlińska, & Osial, 2021). In addition, the models used in distance education impose more responsibility on learning than traditional education models. For this reason, according to the distance education model used, the distance education student can reach the goals in education by acting in accordance with the student roles (İşman, 2011). In the distance education process, which has such advantages, the satisfaction levels of my students are closely related to the quality of the education provided. However, reasons such as insufficient education given at universities in distance education, lack of knowledge about online course design, doubts about the concept of online classroom, and lack of theoretical and empirical research on course design principles for online instructors can be counted as factors that reduce the quality of distance education (McCombs & Vakili, 2005).

Distance education creates a positive effect on student satisfaction by eliminating the inequality of opportunity because the distance between the students' homes and the nearest school is too far or the fees charged by the education courses are too high. It overcomes geographical and demographic challenges and offers everyone an equal chance regardless of their culture, gender and religious background (Pregowska, Masztalerz, Garlińska, & Osial, 2021). In order to increase student satisfaction, institutions that provide distance education should follow technology closely, avoid providing a standard education service to their students and offer more effective services to satisfy students. Because the use of information technologies, which have become a part of our daily life, in distance education has also become inevitable (Eygü, & Karaman, 2015). Students studying in online distance education programs should be provided to interact with various components such as chat, discussion board, private messaging or face-to-face interaction in order to feel belong to the group and prevent social isolation. This situation reflects positively on the success and satisfaction of the student (Ilgaz & Aşkar, 2009). Another factor affecting student satisfaction is the faculty member's ability to evaluate the distance education process effectively and efficiently. Distance education was seen as the most appropriate remedy to continue learning processes in epidemics, wars, and emergencies such as the Covid-19 outbreak. Resources to address technical and infrastructure deficiencies are a major shortcoming for the implementation of distance education. Therefore, for the successful implementation of distance education, technological, financial, institutional, barriers must be removed (Al-Balas., Al-Balas, Jaber, Obeidat, Al-Balas,Aborajooh, Al-Taher & Al-Balas (2020). When learners have the skills to use online devices, they can enjoy online teaching more when they perceive distance education as a helpful and responsive way of learning, communication, and cooperation. As a result, this level of satisfaction seen in students will lead to a higher level of participation, learning, and success in the distance education environment (Sahin & Shelley 2008). Similarly, studies of attitude towards distance education show that as the number of channels offered increases, students have a more positive attitude towards their experiences (Williams, Nicholas, & Gunter, 2005). The development of distance education depends on many factors such as the perception of students,

teachers, and employers, and the transformation of thought. In such cases, the openness of students to innovations, the continuous improvement of teachers' qualifications, and the willingness of employers to hire personnel who have received online training will further increase the value given to distance education (Shaytura, Minitaeva, Ordov, Gospodinov & Chulkov, 2020). Finally, Lee (2001) stated that faculty motivation and commitment to distance education are generally strong. However, he/she argues that improving teaching support in terms of student satisfaction can further increase faculty motivation and commitment.

**Literature Review**

It is striking that distance education studies include the studies of different field experts as well as the field of educational technology. Achievement attitude and satisfaction, appear as important variables in research. Comparative studies are more prominent in studies (Horzum, Özkaya, Demirci, & Alpaslan, 2013). In their meta-analysis study, Allen, Bourhis, Burrell & Mabry (2002) stated there was no significant difference between the satisfaction levels of students towards traditional teaching and distance education methods. This situation showed that the distance education application, whose importance was increasing rapidly with the spread of technology today, is evaluated positively for students. Chang & Smith (2008) stated that in addition to the interactions between student, instructor, and content, gender, and online infrastructure characteristics also affect satisfaction in the distance education process. According to Harsasi & Sutawijaya (2018), the design of the distance education environment and the flexible planning of the course are important variables that affect the success of online learning, which can be effective in increasing the competency levels of the participants. When the satisfaction level of students towards distance education is examined, it was seen that they generally display a positive approach, including medical education (Fatani, 2020). However, the vast majority of students prefer a hybrid learning model rather than just online learning (Sindiani, Obeidat, Alshdaifat, Elsalem, Alwani, Rawashdeh, ... & Tawalbeh, 2020).

Similarly, Talib, Bettayeb & Omer (2021), who analyzed studies examining student opinions during the Covid 19 process, states that online education is found to be satisfactory, beneficial, and effective by students and teachers. However, some participants expressed concerns about the effectiveness of distance learning, the unpredictability of the future, and the long-term consequences of these technological developments in health, education, and safety. Similar to this research, Davies, Howell, & Petrie, (2010) in their study in which they reviewed distance education research conducted by graduate students between 1998 and 2007, determined that the research generally addressed the perceptions and satisfaction levels of participants with a certain distance education experience. He, Yang, Xu, Ping, Li, Sun, ... & Zhang (2021), in their meta-analysis study comparing distance education and traditional education, found that online distance education is not significantly different from traditional education and students have a higher level of satisfaction. When we look at the studies on distance education in general, it was seen that the satisfaction level of the majority of the participants is high.

During the Covid 19 pandemic, which has a global impact, there has also been a great change in education systems. The level of satisfaction with the distance education applied in this process has had an important effect on the success of the students. For this reason, it is important to take comprehensive measures and implement appropriate regulations as a result of the results of the studies examining the satisfaction levels of students in a collective way. There was no study in the literature collectively examines the satisfaction level researches for the Covid 19 process. In addition, large-scale and global evaluation of the factors affecting the level of satisfaction is considered important in revealing the relationship between the field of education and technology and evaluating the applicability of the technology in education. In this context, it is expected that the study will make an important contribution to the literature. This research aims to examine the researches that deal with the satisfaction level of distance education applied in the Covid 19 process with bibliometric analysis. This study tries to answer to the following questions.

1. What is the distribution of the articles written about the satisfaction level for distance education in the Covid 19 process according to the subject areas?
2. What is the distribution of articles written about the level of satisfaction for distance education in the Covid 19 process by years?
3. What is the distribution of the articles written about the satisfaction level for distance education in the Covid 19 process by countries?
4. What are the journals with the most articles about the satisfaction level for distance education during the Covid 19 process?
5. What is the distribution of the articles written about the satisfaction level for distance education in the Covid 19 process according to the languages in which they are published?
6. What is the status of the articles written about the satisfaction level for distance education in the Covid 19 process in terms of multi-authorship?
7. What is the rate of keywords in the titles in the articles written about the satisfaction level for distance education during the Covid 19 process?
8. What is the rate of the keywords in the articles written about the satisfaction level for distance education in the Covid 19 process?
9. What is the country cooperation distribution according to the authors of the articles written about the satisfaction level for distance education in the Covid 19 process?

## Method

### Model of the Research

In this research, bibliometric analysis was used within the scope of data mining to analyze the articles on the satisfaction level for distance education applied during the Covid 19 process. Bibliometric analysis is a method that can use many analysis techniques such as co-entity, co-citation, co-author, bibliographic matching (Nova-Reyes, Muñoz-Leiva, & Luque-Martínez, 2020). Thanks to this analysis technique, influential authors, publications and prominent journals, countries and institutions on a particular subject can be determined. For this reason, those who want to follow the characteristics and development process of scientific outputs in a particular research area can apply this analysis method (Kurutkan & Orhan, 2018). The titles, abstracts, keywords, and collaboration between the authors of the article (n=107) obtained within the scope of this research were analyzed.

### Article Selection Process and Including Criteria

Since the number of articles written in the field of distance education is very high, some criteria were taken into account in determining the number of articles included in the research. In this process, only studies with the title of satisfaction with distance education applied during the Covid 19 process (2019-2021 years) were used. Articles suitable for the scope of the research were obtained using the Scopus database. Scopus database includes many databases such as Elsevier, Sage, Springer, and Taylor & Francis (Mongeon & Paul-Hus, 2016). Within the scope of the research, it was first entered into the Scopus database on 03.07.2021 and searched according to the determined criteria. Published articles were included in the scope of the research with the words distance education and satisfaction in the title between the years 2019-2021. (TITLE (Covid 19 AND satisfaction) AND ABS ( articles ) ) AND PUBYEAR > 2018 AND PUBYEAR < 2022 AND ( LIMITTO ( PUBSTAGE , "final" ) ) AND ( LIMIT TO ( OA , "all" ) AND ( LIMIT-TO ( DOCTYPE , "ar" ) ) AND ( LIMIT-TO ( SRCTYPE , "j" ) ) articles with the concept of covid 19 and satisfaction in the title and abstract in the last three years were filtered out.A total of (n=140) articles, conference proceedings, letters, reviews, and book chapters were obtained. When only the articles were classified (n=107), the article was reached.

### Analysis of Data

Analyzes were performed using the VOSviewer statistical program. The main reason for choosing the VOSviewer program in this study is that distance-based and graphic-based maps used in scientific mapping techniques can be prepared by the program. With the VOSviewer program, which is a text mining application, a bibliometric analysis of journals, analysis of certain subject areas, analysis to determine the word density in studies, analysis of the content of websites, analysis of student performances, analysis of theses and co-authorship can be performed. With VOSviewer, studies can be created in which the subject distributions of the journals are determined according to the years (Artsin,2020).

## Results

Between the years 2019-2021, 107 articles about the satisfaction level for distance education were reached during the covid 19 pandemic process. The distribution of the articles by subject areas, years, countries, journals in which they were published, and publication languages are presented respectively.

**Table 1.** Distribution of articles within the subject areas

| Subject Area | n |
|---|---|
| Social Sciences | 46 |
| Medicine | 44 |
| Computer Sciences | 10 |
| Other areas | 7 |

When the satisfaction surveys designed for the quality of distance education applied worldwide during the Covid 19 process are examined, it was seen that these were conducted in the field of social sciences with a maximum of 42.99% (n=46). This was followed by Medicine 41.12% (n=44) and Computer Sciences 9.35% (n=10), respectively (Table 1).

**Table 2.** Distribution of articles by publication years

| Article Year | n |
|---|---|
| 2019 | - |
| 2021 | 56 |
| 2020 | 51 |

According to table 2, 52.33% (n=56) of the articles examining the level of satisfaction with distance education during the Covid 19 process were published in 2021, and 47.66% (n=51) in 2020.Beside it was seen that there was not any article published in 2019. This may be due to the small number of articles written on the subject due to the new onset of the Covid 19 pandemic.

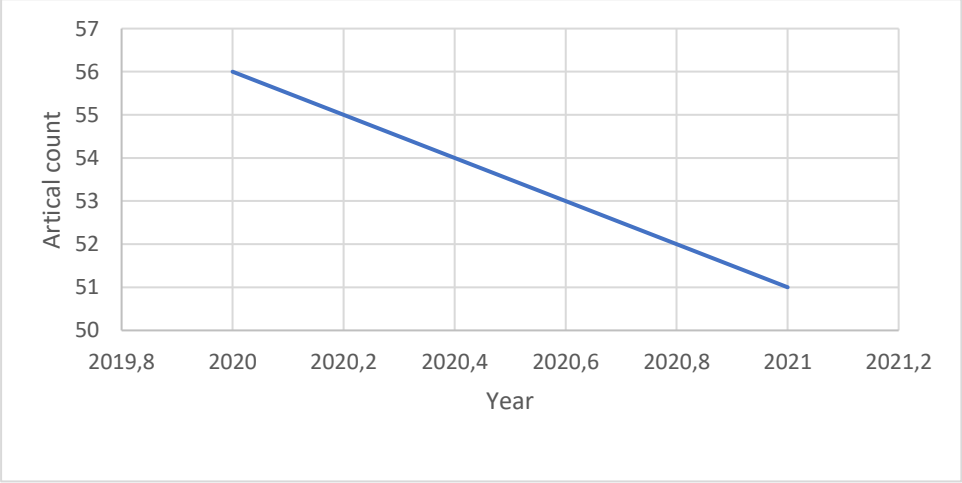


**Figure 1**. Distribution of articles by publication years

When Figure 1 was examined, it can be said that approximately the same number of studies have been produced on the subject of satisfaction with distance education during the two-year pandemic period. Considering that 2021 has not yet ended, it can be predicted that there will be an increase in the number of researches in this field by the end of the year.

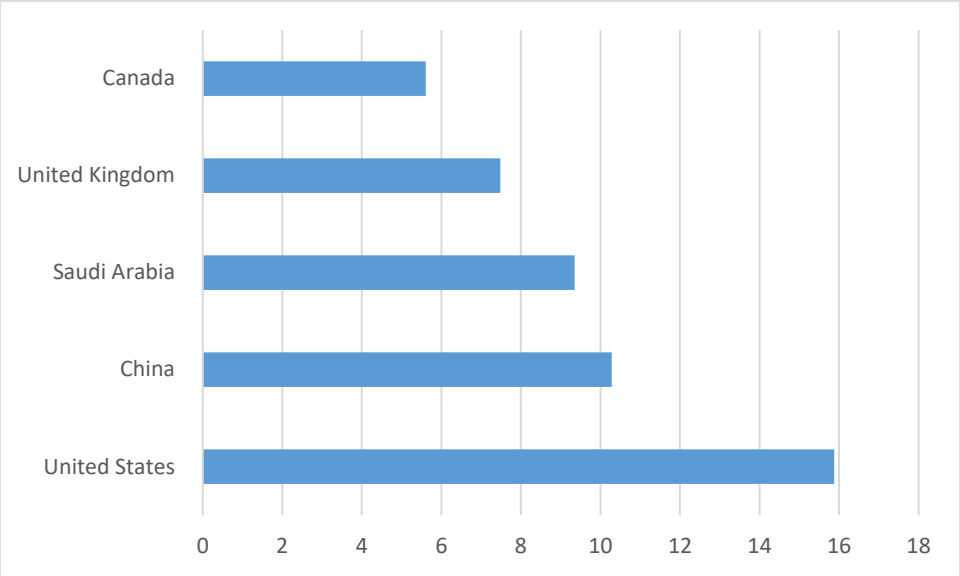


**Figure 2.** Distribution of articles by countries

When the origin of the articles about satisfaction with distance education was examined, the highest number of countries such as the United States of America with 15.88% (n=17), China with 10.28% (n=11), and Saudi Arabia with 9.35% (n=10) (Figure 2).

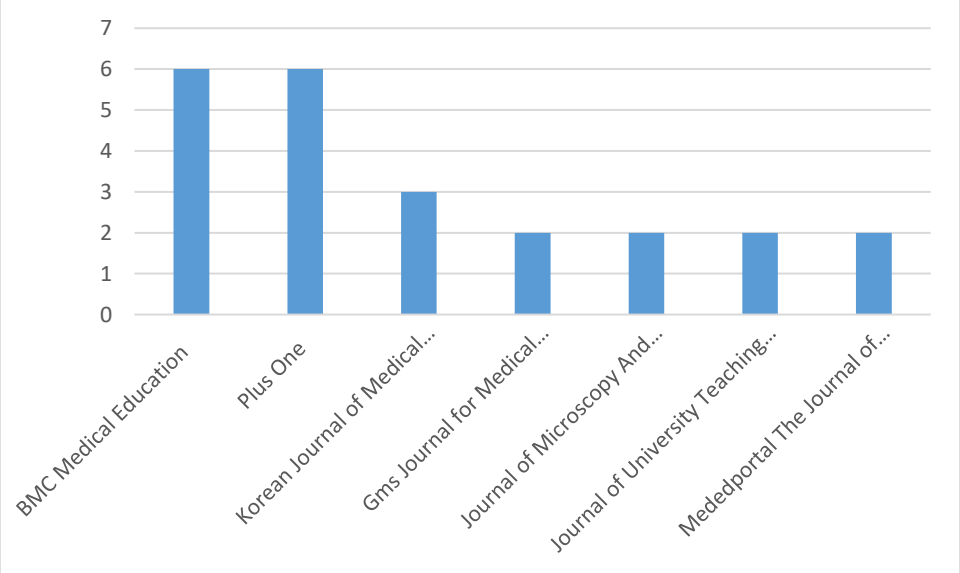


**Figure 3.** Journals with the most published articles

When the distribution of the articles based on journals was examined, it was seen that the most publications are in the journals named BMC Medical Education (n=6), Plos One (n=6), and Korean Journal of Medical Education (n=3). The article counts in the journal of Microscopy And Ultrastructure, Journal of University Teaching And Learning Practice and Mededportal The Journal of Teaching And Learning Resources are (n=2).

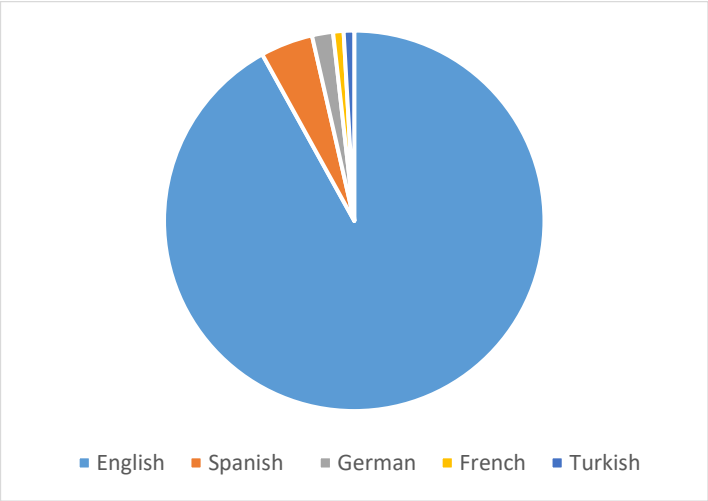


**Figure 4**. Language of the articles

It was seen that the majority of the articles were prepared in English (n=103), 96.26%. In some articles, it is understood that another language is used in addition to English. For example, (n=5) articles were written in Spanish language, (n=2) articles were written in German language, and other articles were written in French and Turkish languages. This shows that the articles were prepared in their native language, together with English, which is the language of scientific publication (Figure 4).

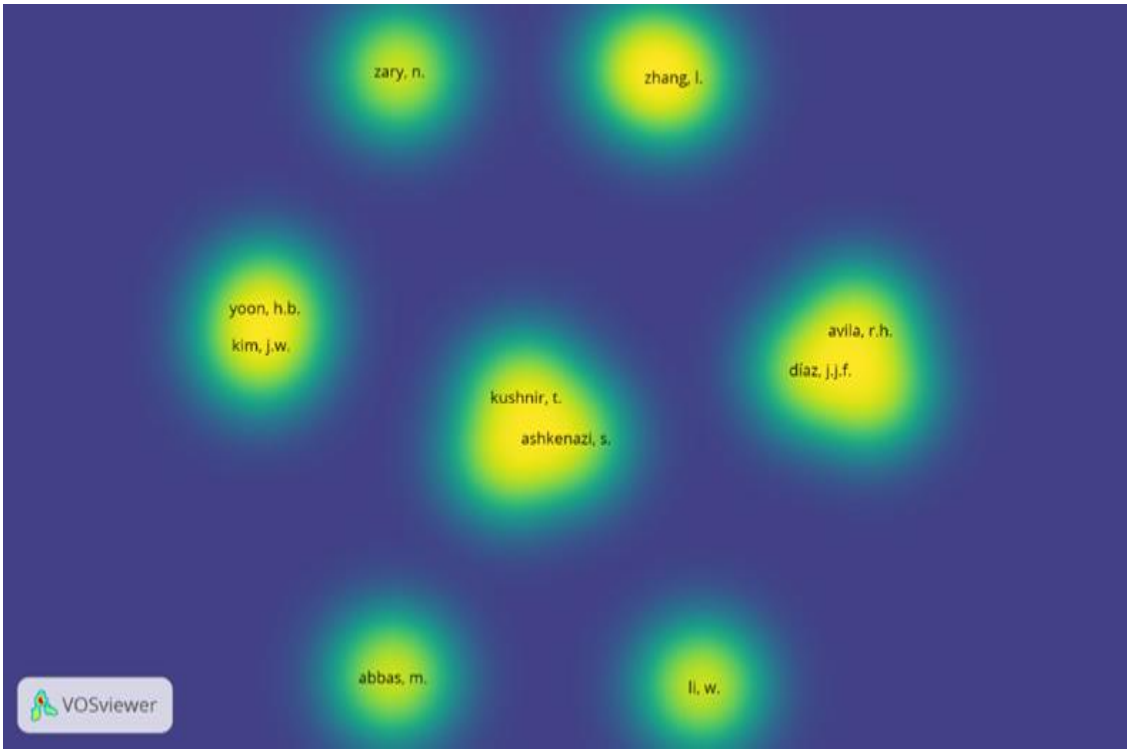


**Figure 5.** Density view showing the authors' relationships with each other

When Figure 5 was examined, it was seen that there are seven separate author clusters. Major researchers in the network are N. Zary, I. Zhang, H. B. Yoon, and J. W. Kim, T. Kushnir, and S. Ashkenazi, R.H. Avila, and J.J.F. Diaz, M. Abbas, W. Li. Other researchers depend on the main researchers in these seven groups.

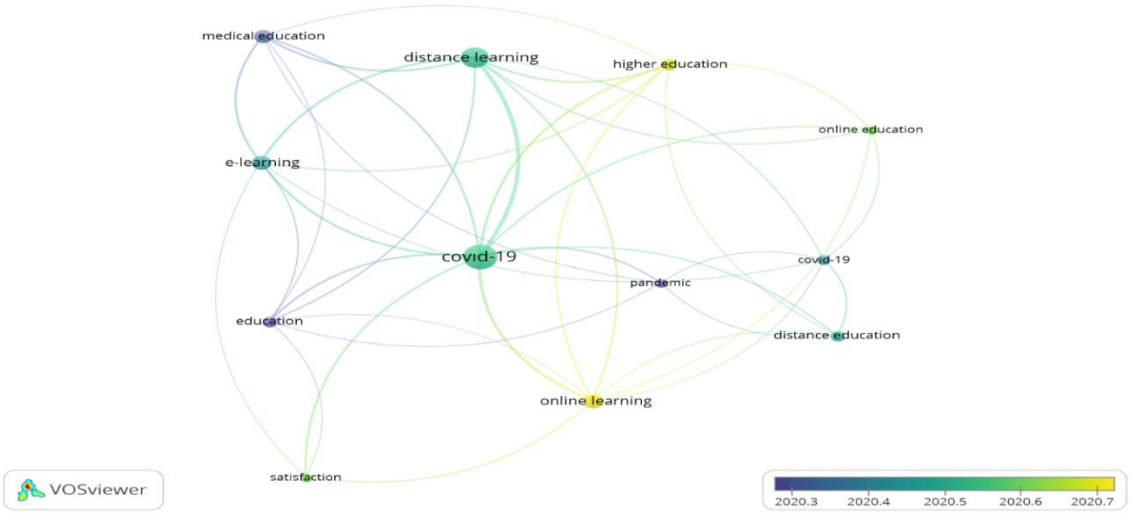


**Figure 6**. Cluster density view by keywords

The results obtained from the VOSviewer program for keywords are shown in Figure 6. The most common keywords in the articles were analyzed by bibliometric analysis. In this technique, the number of articles in which two keywords appear together is calculated (Garrigos-Simon & et al., 2018). As a result of the analysis, it was seen that the keywords were networked with words such as a pandemic, online learning, distance education, satisfaction, e-learning, higher education, online education concerning the word Covid 19.

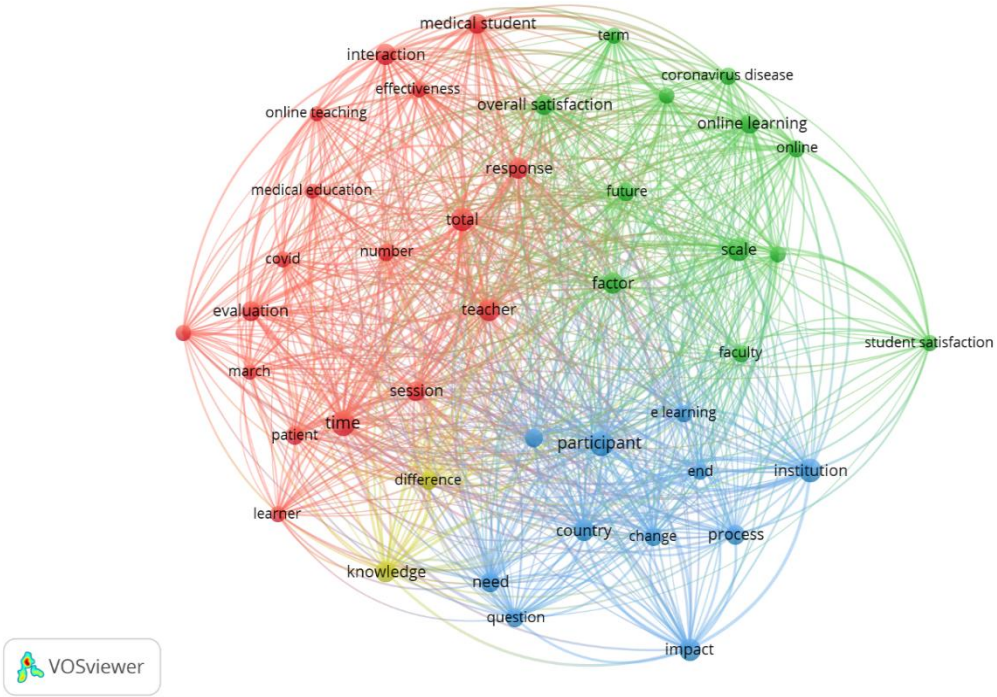


**Figure 7**. Cluster density view according to article abstracts (n=42)

According to the article summaries, when cluster density analysis is examined, it was seen that different concepts (n=42) have been reached (Figure 7). These concepts were grouped into four clusters. Under the first group, there are concepts such as medical education, medical students, learner, teacher, and evaluation. The second cluster includes the concepts of difference and knowledge, the third cluster includes expressions such as impact, process, country, need, and questions, and the fourth cluster includes concepts such as student satisfaction, future, online learning, coronavirus disease, and scale.

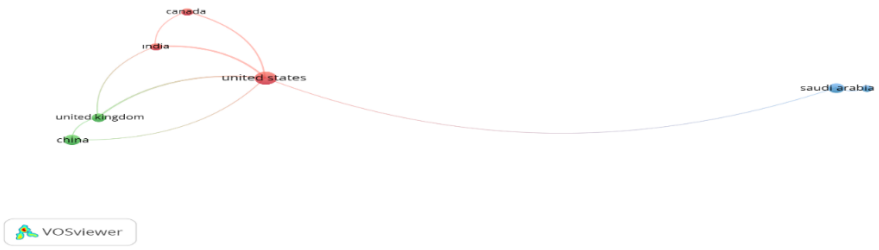


**Figure 8**. Country collaborations

When Figure 8 was examined, it was seen that cooperation between countries is gathered under three clusters. The first group countries are Canada, India, and the USA. D., the second group countries are classified as China and England, and the third group countries are Pakistan and Saudi Arabia.

**Limitations of the Study**

Research findings are based on computer-based data obtained. It covers articles published in double-blind peer-reviewed journals over three years covering the Covid 19 process. Journals which in the Scopus database were included in the research data. Data obtained from conference proceedings, letters, compilations, and book chapters were excluded.

## Conclusion and Discussion

The research aims to examine researches that deals with the satisfaction level of distance education applied in the Covid 19 process with bibliometric analysis. At the end of the research, it was found that the articles which examined the level of satisfaction with distance education were generally carried out in the fields of medicine, computer sciences, and social sciences. It was determined that most of the studies were conducted in countries such as the USA, China, Saudi Arabia, England, and Canada, and the articles were mostly written in English in the research. Data were also analyzed by bibliometric analysis. According to the results of the analysis, it was found that the keywords formed a network with words such as a pandemic, online learning, distance learning, satisfaction, e-learning, higher education, online education concerning the word Covid 19. Finally, it was determined that the abstracts of the articles were grouped into four clusters.

It was observed that the articles examining the level of satisfaction with distance education are generally carried out in the fields of medicine, computer science, and social sciences. Supporting these findings Barteit, Guzek, Jahn, Bärnighausen, Jorge & Neuhann (2020) and Gurcan, Ozyurt & Cagitay, (2021) stated e-learning studies in medicine have come to the fore in recent years. Due to studies in different disciplines and sample groups, there has been a rapid increase in articles in the field of distance education. The reason for this increase can be evaluated as the positive perceptions of institutions towards the field of distance education. In addition, another reason for the increase in research may be that the importance given to distance education studies is increasing day- by-day (Babur, Kiper, Çukurbaşi, Özer, Tonbuloğlu., Küçük, ... & Horzum, 2016). Rapid changes in the way students learn, especially in fields such as medicine, computer science, fine arts and architectural design, can be quite challenging for them (Pregowska, Masztalerz, Garlińska, Osial, 2021).

It was determined that the studies in the field of distance education are mostly carried out in countries such as the USA, China, Saudi Arabia, England, and Canada, and the articles are mostly written in English. Similar to this finding, it was stated that in the literature the most of the studies originate from the USA (Gurcan, Ozyurt & Cagitay, 2021; Tibaná-Herrera, Fernández-Bajón & De Moya-Anegón, 2018). Again, it was stated in the literature that more than 80% of all articles were produced by researchers in only five countries (Zawacki-Richter, Bäcker & Vogt (2009).

According to the results of bibliometric analysis, keywords such as online learning, distance education, satisfaction, e-learning, higher education, online education were found to be associated with the word Covid 19. Similar to these findings, Zawacki-Richter (2009) indicates that the issues were discussed student support, instructional design, educational technologies, etc., as the main research topics in distance education since the 1980s. In support of this situation, Özmen & Kan (2021) stated that in the last five years most of the theses were prepared on distance education in fields such as computer sciences and educational sciences. The most frequently used words in the theses are e-learning, web-based distance education, online education, distance learning, internet-based education, distance education, success, higher education, motivation, attitude. Therefore, it would be appropriate to direct students to the use of different online education tools in order to increase their satisfaction levels during the pandemic process. When face-to-face education is introduced after the Covid-19 pandemic, teachers and students should be encouraged to use online tools to improve teaching and learning (Pokhrel & Chhetri, 2021). According to Can (2020) the pandemic has important pedagogical implications. During this period, there was a significant increase in demand for open and distance education. In addition, the importance of open and distance education services in the society was begun to be understood. This pandemic was shown that not only quantity but also quality is important in open and distance education. Covid-19 pandemic was showed that the open and distance education system in Turkey needs to be strengthened in terms of infrastructure, access, security, content, design, implementation, quality, legislation and pedagogy. In addition, Güneş, Üstündağ, Yalçın & Safran (2017) evaluated the bibliometric analysis of studies conducted in the field of education between 1980-2014 and found that the concepts of teacher, teaching and education were mostly included in the field of education. This is important in terms of showing that some common concepts are used in educational studies regardless of time.

One of the findings obtained in the research was that the cooperation between the authors of the articles written during the covid 19 process (2019-2021) were grouped under three clusters. The first cluster was composed of authors who were living in Canada, India and the USA. The second cluster was composed of authors who were living in China and England, and the last cluster was composed of authors who were living in Pakistan and Saudi Arabia. Similarly Zawacki-Richter, Bäcker & Vogt (2009) also stated that collaborative research and more qualitative studies have an important place in distance education research. Key words such as pandemic, online learning, distance education, satisfaction, e-learning, higher education, online education are frequently included in the studies, where the articles examined in the research are mostly in the fields of medicine, computer science and social sciences, the number of studies conducted in the USA and European countries is quite high. It can be said that the studies are concentrated at the higher education level.

This research includes articles (between 2019-2021) written to examine the level of satisfaction with distance education applied during the Covid 19 pandemic process. In this process, the effect of education applied in many different fields, especially medicine and social sciences, on students was reflected. Since the Covid 19 pandemic continues to show its effect worldwide, it was thought that the number of researches on distance education applied during the pandemic process will increase in the coming years. In this context, it would be appropriate to focus on meta-analysis studies and literature reviews that examine researches in a holistic way. In addition, bibliometric studies examining the quality of distance education in different disciplines, expectations, attitudes, satisfaction and successes of students, faculty members and other stakeholders in the process can also be brought into literature.

Another result of the study was the different usage patterns seen in the concepts related to distance education concerning the Covid 19 pandemic. Concepts such as online learning, distance education, and e-learning have started to take place more in educational environments. Considering the meanings of these concepts and their reflections on the educational environment, qualitative or quantitative research designs can be created and their effects on student satisfaction can be examined.

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International Online Journal of Educational Sciences

ISSN: 1309-2707

# The Conceptual Teaching Trajectory and Conceptual-Semantic Gaps in Social Studies Education

*Research Article*

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**To cite this article:** Dogan, Y. (2021), The conceptual teaching trajectory and conceptual- semantic gaps in social studies education, *International Online Journal of Educational Sciences*, *13*(5), 1603-1619.

ARTICLE INFO

*Article History*:

Received: 24.09.2021

Available online: 08.11.2021

ABSTRACT

This study aims to reveal the teaching trajectory of the concept of democracy, the teaching of which has been more and more complicated over the years, in the textbooks and the semantic gaps appearing in this teaching trajectory, and to include the results of the literature in the teaching trajectory to form a teaching trajectory for the concept of democracy. The aim of this study is to draw attention to certain problems in the teaching of multidimensional concepts that constitute an important place in the content of social studies. The definition of "misconception" that refers to the misunderstandings arising in the teaching of one-dimensional concepts such as "heat, light, volume, mass" in science teaching is also used in teaching social studies. However, most of the concepts included in the content of social studies consist of multi-dimensional concepts such as "democracy, change, respect, reality etc.". It is necessary to discuss whether different meanings that emerge in the teaching of these concepts are "misconceptions" or whether the concept is one of the different "meaning dimensions." In this descriptive study in which the document review was used as a data acquisition technique, it was attempted to explain these problems by especially examining the Life Science, Social Studies, Human Rights Citizenship and Turkey Republic Atatürk's Principles and Kemalism textbooks and the concept of "democracy." First, what kind of teaching trajectory the concept of "democracy" in the textbooks followed was revealed. Furthermore, it was also stated which meaning dimensions of the concept came to the fore and which dimensions were overlooked (semantic gaps). The findings of the study were discussed, and various suggestions were developed in this framework.



**Keywords:**
Conceptual teaching trajectory, conceptual-semantic gaps, democracy, social studies, concept teaching.

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DOI: https://doi.org/10.15345/iojes.2021.05.019

## Introduction

### Learning Trajectory, Teaching Trajectory, and Conceptual-Semantic Gaps

The concept of *learning trajectory* constitutes one of the research subjects commonly discussed in mathematics education in the field of education. This concept emerged with the term "hypothetical learning trajectory" used by Simon (1995). Simon defines the learning trajectory as "the teacher's prediction as to the path by which learning might proceed." He described it as hypothetical because the trajectory of actual learning is unpredictable and characterizes an expected trend.

> "Confrey et al. (2008; cited in Dündar and Gündüz, 2015) discussed learning trajectories from several perspectives. Firstly, learning trajectories are the models of possible paths in students' learning processes constructed by researchers. They showed that this path was not linear. The multiple trajectories of students are within similar corridors, the limits of which are determined by mathematical activities. Therefore, learning trajectories are embedded within the conceptual corridors. Nevertheless, students encounter some limitations and obstacles within these corridors. Secondly, learning trajectories are based on a synthesis of the literature and are not a simple review. Thirdly, they focused on the role of teaching. In other words, teaching activities should be consciously arrangement to support student's progress because this progress is not natural progress but is consciously made under the guidance of the teacher."

When the components of the learning trajectories related to mathematics were examined, it was stated that they consisted of three parts, which are mathematical goal, developmental path followed to achieve this goal, and instructional activities compatible with all levels (Clements& Sarama 2004).

- The first component of learning trajectories is the goal. Here, the goal is to include a great idea.
- The developmental path is expressed as the unique learning path that the child will follow in the development of his/her understanding and ability in a particular field of mathematics.
- The instructional activities that constitute the third part of learning trajectories consist of instructional tasks and activities that are compatible with each level of thought in developmental progress. These tasks are designed to help children learn the subject, and they also enable them to practice in order to specialize in this subject. Teachers use instructional activities so that the child moves from one level to the next.

It is possible to establish learning trajectories related to several contents of mathematics education from pre-school level to middle school level with the contents of other courses. From this standpoint, it is anticipated that there is a need to create learning trajectories with a goal, developmental path, and instructional activities for certain contents of the Social Studies course. It is necessary to facilitate the teaching of abstract and multifaceted concepts in Social Studies courses, and for achieving this, to establish a teacher trajectory about how these concepts are learned. Although it is hard to observe how students comprehend the Social Studies concepts that are planned to be taught, learning trajectories try to identify and define the key items, structures, and behaviors that can be observed. If we correlate the importance of creating learning trajectories with a concept in terms of Social Studies, attention should be paid to the processes below. One of the fundamental concepts of Social Studies is the concept of "State." It will be quite useful for the teacher if a trajectory is created based on whether there is a need for a learning trajectory over this concept, if there is a need, which age group will be considered and how this concept will be taught to the child, what developmental path will be followed by class/age for this concept, and which instructional activities will be used while following this path. Nguyen (2010) referred to learning trajectories as a sequential network of structures that help students build more complex knowledge from less complex knowledge over time. In Social Studies, the concept of state should be

considered as an information network becoming more complex from primary school onward, and it is valuable what kind of learning trajectories are created for the complex structure of this concept. As Clements and Samara (2004) expressed, it will be enabled to describe the thinking and learning of children in the form of mapping the development of concepts and skills and in a certain subject area. Moreover, they reported that it could be conceptualized as setting a route in teaching via some instructional tasks which are supposed to set children in motion with the development of their mental thinking levels.

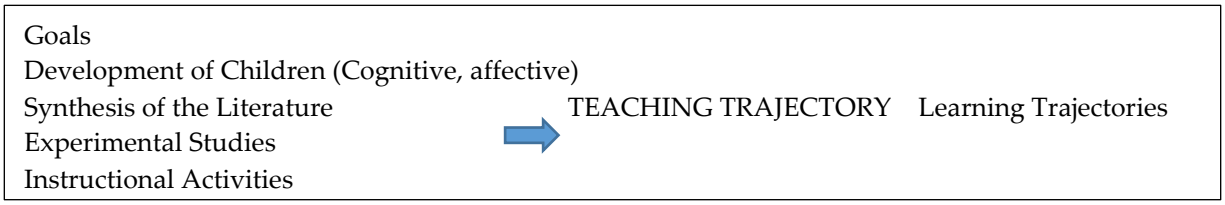


**Figure1.** Learning and Teaching Trajectory

Considering that the teacher will monitor and intervene in the learning trajectories in the classroom, it will be possible to accomplish this process with the teaching trajectory. In this study, the teaching trajectory was defined as a gradually planned and delimited process related to the path along which teaching progresses. However, since teaching in the classroom setting is a common activity carried out by the whole class, it is not a process specific to the individual like the learning trajectory. When it is considered from the teacher's perspective, it can also be considered that this process can be unique (teacher-specific). From the teacher's perspective, it can be described as predictive. However, it can be argued that it is a planned process based on the curriculum, textbook, and teacher's teaching habits. It can be for a course such as social studies, or it can be discussed in terms of a concept, a skill, or a value.

The *semantic gap* refers to the fact that the correlations related to the phenomena, people and processes mentioned in any text, the causal relations between them, and their structures and qualities are not demonstrated and explanations on them are not provided (Köksal, 2014). )It is also significant to detect the semantic gaps of the concepts regarding learning trajectories. It may be required to state the extent to which learners understand these concepts to reveal their conceptual trajectories. In this respect, textbooks give an extensive idea about determining the learning trajectories shaped by the resources that children use for learning and the semantic gaps. Although the majority of the studies in this field were conducted with students and teachers (Brown, Sarama & Clements, 2007; Mojica, 2010; Bardsley, 2006; Wilson, 2009; Confrey, 2010; Edgington, 2012, Eroğlu, 2017; Deniz, 2018), no studies on associating the teaching trajectory with textbooks have been encountered. This study aims to reveal the teaching trajectory of the concept of democracy, which is taught in many different aspects from simple to complex, in the relevant textbooks of Social Studies, and to put forward the semantic gaps observed in textbooks in the teaching of this concept. Among the reasons for analyzing especially the teaching trajectory of this concept, there is the presence of a learning path other than school learning with regard to the concept, briefly, the fact that teaching the learning trajectory of this concept is also important in daily life. The teaching trajectory of the concept of democracy, which has been included in the courses such as Life Science, Social Studies, Human Rights, Citizenship and Democracy and Turkish Republic Revolution History and Kemalism, from the first grade of primary school to the eighth grade of middle school, was reviewed in this study. Furthermore, conclusions of academic studies on how students learned the concept of democracy were examined to create a teaching trajectory for the concept of democracy, and answers were sought to the following questions in this scope:

- What is the teaching trajectory of the concept of "democracy" in the textbooks of Life Science, Social Studies, Human Rights, Citizenship and Democracy and Turkish Republic Revolution History and Kemalism?
- What semantic gaps exist in this teaching trajectory regarding the concept of "democracy"?
- What does the synthesis of the literature indicate when it is limited to academic studies on teaching democracy to children?

## Method

### Research Design

The descriptive survey research method was used in this study. It was attempted to reveal what kind of process was followed to teach the concept of democracy in the Life Science, Social Studies, Human Rights, Citizenship and Democracy and Turkish Republic Revolution History and Kemalism textbooks, in other words, the teaching trajectory. The semantic gaps formed for the concept of democracy on this trajectory were also discussed. In addition to them, concerning the teaching of the concept of democracy, literature was also limited the Turkish school textbooks and examined within the context of students, and the results were compared.

### Data Acquisition Technique

In this study in which the document analysis was used as a data acquisition technique, it was attempted to explain these problems by especially examining the Life Science, Social Studies, Human Rights, Citizenship and Democracy and Turkish Republic Revolution History and Kemalism textbooks and the concept of "democracy." First, what kind of teaching trajectory the concept of "democracy" in the textbooks followed was revealed. In this context, the following textbooks were examined as data sources.

**Table 1.** Textbooks as Data Sources of the Study

| Grade | Document | (Frequency) |
|---|---|---|
| 1 | Life science – KÖK-e | 1 |
| 2 | Life science – SDR İPEKYOLU | 2 |
| 3 | Life science – MoNE | 5 |
| 4 | Human rights … – MoNE | 7 |
| | Social Studies – TUNA | 4 |
| 5 | Social Studies – ANADOL | 10 |
| 6 | Social Studies – MoNE | 76 |
| 7 | Social Studies – MoNE | 127 |
| 8 | Turkey Republic … - MoNE | 36 |
| | **Total** | **268** |

### Data Analysis

In the examination of the relevant textbooks, the reviews were made specifically for words such as "democracy, democrat, democratic" derived from the concept of democracy ." Of course, there are lots of places that can be associated with democracy. However, since it was unknown whether the child could establish this relationship, only the author's/authors' associations were included.

| Social Studies 6 (MoNE) | | | |
|---|---|---|---|
| **Page** | **Quotation** | **Meaning** | **Context** |
| 19 | 15 July Democracy and National Unity Day | Unavailable | BT; Culture |

| | | | |
|---|---|---|---|
| 30 | As seen in the adjacent figure, human rights, children's rights and citizenship rights in democratic countries are protected by international documents and constitutions. | Democracy and rights | BT; Rights in the solution of problems |
| 34 | It is our democratic right to petition the relevant institutions for the solution of our problems. | Democracy and rights | BT; Rights in the solution of problems |
| 186 | You will be able to learn to compare different forms of government in terms of the basic principles of democracy.<br>You will be able to explain the importance of democracy in your social life. | | 6. Statements on the active citizenship unit |
| 188 | What comes to your mind when democracy is mentioned? | Question for preparation for the subject "What kind of Administration?" | Definition |

**Figure 2.** Sample of the Raw Data Analysis

Direct emphases and associations on the concept of democracy were quantitatively shown and subjected to a content analysis process in the context of meaning dimensions. As a result of this content analysis, various results regarding the dimensions of the concept of democracy were revealed.

## Findings

The reviews of studies on the teaching trajectory for the concept of democracy, conceptual-semantic gaps, and the determination of students' perception or understanding of democracy are respectively included in the heading of results.

### Teaching Trajectory for the Concept of Democracy

Textbooks of the courses such as Life Science, Social Studies, Human Rights, Citizenship and Democracy and Turkish Republic Revolution History and Kemalism centering on social sciences from the first grade of primary school to the eighth grade of middle school were examined in relation to the concept of democracy, and the results obtained and the teaching trajectory of the concept of democracy has been created and presented in Table-2.

**Table 2.** Teaching Trajectory of the Concept of Democracy

* 4th Grade Human Rights, Citizenship and Democracy and Social Studies textbooks were discussed together.

| | | Superficial emphasis | | | Democratic individual | | | | | | | | | | Democratic State | | | | | | | | | | | | History of Democracy | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grade | Document | Naming and describing | Definition | Superficial emphases | Rights | Responsibilities | consensus | Freedom | Respect | Participation | Sensitivity | Inspection | Daily life | Democratic individual | Pluralism | Majority | Justice | Equality | Rule of Law | Election | National Sovereignty | Checks and Balances | Social State | Constitution | Democratic State | Europe | Turkish history | Ottoman | Turkey | Ataturk and his Principles | History of Democracy | |
| 1 | Life science 1 | 1 | | 1 | | | | | | | | | | 0 | | | | | | | | | | | 0 | | | | | | 0 | 1 |
| 2 | Life science 2 | 2 | | 2 | | | | | | | | | | 0 | | | | | | | | | | | 0 | | | | | | 0 | 2 |
| 3 | Life science 3 | 3 | | 3 | | | | | 1 | | | | | 1 | | | | | | 1 | | | | | 1 | | | | | | 0 | 5 |
| 4 | Human rights 4 | | 1 | 1 | 2 | 1 | 2 | | | | 1 | | | 6 | | | | | | | | | | | 0 | | | | | | 0 | 7 |
| 4 | Social studies 4 | 1 | 1 | 2 | | 1 | | | | | | | | 2 | | | | | | | | | | | 0 | | | | | | 0 | 4 |
| 5 | Social studies 5 | 3 | | 3 | 1 | | | 1 | | | | | | 3 | | | 2 | | | | | | | | 2 | | | | 2 | | 2 | 10 |
| 6 | Social studies 6 | 3 | 8 | 11 | 11 | 7 | 1 | 5 | 3 | | | | | 36 | 6 | 3 | 7 | | | 8 | 1 | 3 | | | 27 | | | | 1 | | 1 | 76 |
| 7 | Social studies 7 | 4 | 15 | 19 | 4 | | | 8 | 2 | 14 | | 1 | 1 | 30 | 5 | | 11 | 2 | 3 | 10 | 4 | 2 | 2 | 2 | 41 | 13 | 5 | 8 | 2 | 9 | 37 | 127 |
| 8 | TRAPK 8 | | | 4 | | | | 5 | 1 | | | | 1 | 9 | 4 | | | 1 | | | | | | | 5 | | | | 10 | 8 | 18 | 36 |
| | TOTAL | 17 | 29 | 46 | 18 | 9 | 3 | 19 | 7 | 27 | 1 | 1 | 2 | 87 | 15 | 3 | 20 | 3 | | 19 | 5 | 5 | 2 | 2 | 76 | 13 | 5 | 8 | 15 | 17 | 58 | 268 |

When the conceptual teaching trajectory of democracy is examined, there are important clues about the dimensions and process of teaching the concept of democracy to our children. To mention them respectively;

- Aside from the quantitative decline in the 8th Grade Turkish Republic Revolution History and Kemalism course, a teaching trajectory in which the concept of democracy is discussed in an increasingly detailed and ever-widening range of meanings can be mentioned. In the literature, there are studies finding changes in the perception and attitude of democracy in this context (Yoğurtçu, 2010). However, there are also studies that did not find any change (Ural, 2011). There are also studies on the negative course of the process, such as the 5th graders exhibiting more democratic attitudes than the 8th graders (Çalık, 2002).
- When the "superficial emphases" part, which refers that the concept of democracy is given only as a word without explaining its meaning and a general definition is provided instead of explaining or exemplifying it in detail, was excluded, it was revealed that the concept of democracy was attempted to be taught in 3 main themes:

  1. Democratic Individual: This dimension is a theme in which the basic values and behaviors of democracy are included and the characteristics of a democratic individual come to the forefront. According to the frequency of emphasis, it is observed that there are dimensions such as "participation, freedom, rights, responsibilities, respect, consensus, daily life, sensitivity and supervision," respectively.

  2. Democratic State: This dimension is a theme in which the characteristics that should be present in a democratic state are mentioned. According to the frequency of emphasis, it is observed that there are dimensions such as "justice, election, national sovereignty, separation of powers, pluralism, majority, equality, state of law, social state, constitution."

  3. History of Democracy: In the third and final dimension, it is observed that the history of democracy comes to the forefront. In this dimension, it can be said that the subjects of "Atatürk and his Principles, Turkey, Europe, the Ottoman and Turkish History" are discussed by associating them with democracy.
- It can be said that each of the four dimensions included in the review showed a gradually intensifying development. However, it was observed that emphasis was focused especially on the 6th and 7th grades.
- When each theme is examined in detail in itself, various details in the trajectory are remarkable:
  - The rights were further mentioned, while responsibilities were less mentioned. It may be more useful to mention responsibilities at least as much as rights. At the very least, it may be useful to pay regard to a balance of weight of the content on the relevant subjects.
  - It was observed that dimensions such as consensus, sensitivity, and supervision were merely mentioned, and even considering the literature-based dimensions of the concept of democracy, it was also observed that dimensions such as "transparency, solidarity, localization, listening, self-expression, and tolerance" were not mentioned at all.
  - It is also remarkable that more pedagogically meaningful dimensions such as teaching democracy by associating it with the child's life, such as the context of daily life, are not included sufficiently.

Although a teaching trajectory that refers to shaping the learning path to be jointly followed by all students seems reasonable, it seems more appropriate to establish a flexible teaching trajectory with diversity and richness that takes into account different learning trajectories by considering the results revealed by the main patterns that emerge as a result of the examination of students' individual learning trajectories, students' interpretations or perceptions that emerge in the literature, student/learning-centered or teacher/teaching-

centered experiences revealed through experimental studies and different findings that will contribute to the process.

**Semantic Gaps for the Concept of Democracy**

When the teaching trajectory of the concept of democracy, which includes courses such as Life Science, Social Studies, Human Rights, Citizenship and Democracy and Turkish Republic Revolution History and Kemalism from the first grade of primary school to the eighth grade of middle school, is examined, it is observed that some dimensions are not mentioned at all. In this study, the fact that some dimensions are not mentioned at all in the teaching of a multidimensional concept is expressed as the "**conceptual-semantic gap.**" As shown in the teaching trajectory, the semantic gaps of the concept of democracy are presented in Table-3.

**Table 3.** Conceptual-Semantic Gaps for Democracy

| | | Superficial emphasis | | | Democratic individual | | | | | | | | | | Democratic State | | | | | | | | | | | | History of Democracy | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grade | Document | Naming and describing | Definition | Superficial emphases | Rights | Responsibilities | consensus | Freedom | Respect | Participation | Sensitivity | Inspection | Daily life | Democratic individual | Pluralism | Majority | Justice | Equality | State of Law | Election | National Sovereignty | Separation of powers | Social State | Constitution | Democratic State | Europe | Turkish history | Ottoman | Turkey | Ataturk and his Principles | History of Democracy | |
| **1** | **Life science 1** | 1 | | 1 | | | | | | | | | | 0 | | | | | | | | | | | 0 | | | | | | 0 | 1 |
| **2** | **Life science 2** | 2 | | 2 | | | | | | | | | | 0 | | | | | | | | | | | 0 | | | | | | 0 | 2 |
| **3** | **Life science 3** | 3 | | 3 | | | | | 1 | | | | | 1 | | | | | | 1 | | | | | 1 | | | | | | 0 | 5 |
| **4** | **Human rights 4** | | 1 | 1 | 2 | | 2 | | | | 1 | | | 6 | | | | | | | | | | | 0 | | | | | | 0 | 7 |
| **4** | **Social studies 4** | 1 | 1 | 2 | | 1 | | | | | | | | 2 | | | | | | | | | | | 0 | | | | | | 0 | 4 |
| **5** | **Social studies 5** | 3 | | 3 | 1 | 1 | | 1 | | | | | | 3 | | | 2 | | | | | | | | 2 | | | | 2 | | 2 | 10 |
| **6** | **Social studies 6** | 3 | 8 | 11 | 1 | | 1 | 5 | 3 | | | | | 6 | 6 | 3 | 7 | | | 8 | 1 | 3 | | | 7 | | | | 1 | | 1 | 76 |
| **7** | **Social studies 7** | 4 | 15 | 19 | 4 | 7 | | 8 | 2 | 4 | | 1 | 1 | 0 | 5 | | 1 | 2 | 3 | 0 | 4 | 2 | 2 | 2 | 1 | 13 | 5 | 8 | 2 | 9 | 7 | 127 |
| **8** | **TRAPK 8** | 4 | | 4 | | | | 5 | 1 | | | | 1 | 9 | 4 | | | 1 | | | | | | | 5 | | | | 0 | 8 | 8 | 36 |
| | **TOTAL** | 7 | 29 | 46 | 8 | 9 | 3 | 9 | 7 | 7 | 1 | 1 | 2 | 7 | 5 | 3 | 0 | 3 | 3 | 9 | 5 | 5 | 2 | 2 | 6 | 3 | 5 | 8 | 5 | 7 | 8 | 268 |

When the conceptual-semantic gaps for the concept of democracy are examined, it is observed that dimensions such as sensitivity, supervision, social state, constitution, equality, majority, the rule of law, and consensus are merely mentioned. Furthermore, considering the dimensions based on the literature, it is observed that dimensions such as "transparency, solidarity, localization, listening, self-expression, tolerance, diversity, public interest, patriotism, accountability" are not mentioned at all. Concerning another remarkable point, it can be mentioned that there is a semantic gap in terms of all dimensions of the concept of democracy in the 1st, 2nd, and 3rd grades of primary school, where the Life Science course is included.

**Teaching Trajectory for the Concept of Democracy in the Literature**

"Experiences on students' learning processes of the concept of democracy, teachers' opinions and teaching experiences, and other studies in the literature" are surely important for a study to be conducted to determine the learning trajectory for the concept of democracy in Turkey. However, since the existing situation (teaching trajectory) was attempted to be determined in this study, an understanding limited to teacher and student-centered studies was adopted and examined within the context of the literature:

There are many studies on the democratic attitudes of students at the primary education level. When these studies are examined, there are studies that found positive changes in the perception and attitude of democracy throughout the process (Yoğurtçu, 2010). However, there are also studies that did not find any change (Ural, 2010). There are also studies on the negative course of the process, such as the 5th graders exhibiting more democratic attitudes than the 8th graders (Çalık, 2002). In the studies conducted by the gender factor, it was concluded that the democratic attitudes of female students were higher compared to male students (Kaldırım, 2005; Şimşek, 2011; Ural and Sağlam, 2011; Kontaş, Selçuk and Polat, 2016; Yüksel, Bağcı and Vatansever, 2013; Kuş and Çetin, 2014).

There are also studies focusing on preservice teachers' democratic attitudes. In most of these studies, it is argued that preservice teachers have a sufficient level of democratic attitudes (Saracaloğlu, Evin and Varol, 2004, Akın and Özdemir, 2009; Yazıcı, 2011). On the contrary, there are studies reporting that the democratic attitudes of preservice teachers are not sufficient (Çankaya and Seçkin, 2004; Kılıç, 2010; Yıldırım, Akbaşlı and Şahin, 2010).

When it was considered in detail, it was also argued that there was no change in their democratic attitudes during the four-year education period (Kılıç, 2010) and that the democratic attitudes of teachers remained at a lower level (Yıldırım, Akbaşlı and Şahin, 2010). Similar to the situation that occurs in students according to the gender factor, it was observed that female social studies preservice teachers considered democracy issues more positively (Kozaner, 2012). Likewise, there are studies revealing that most preservice teachers consider themselves to be democratic teachers. However, they think they have not received enough education to be democratic teachers (Demircioğlu, Mutluer and Demircioğlu, 2011).

When teachers' democratic attitudes were examined, they stated that they mostly exhibited democratic behaviors (Cilesun, 2012); however, students considered their teachers less democratic in classroom practices (Toper, 2007; Cilesun, 2012). In this context, the result of the study revealing that the level of democracy of in-class behaviors of teachers who receive in-service training on democratic education is higher compared to teachers who do not receive in-service training on democratic education (Çakmur, 2007) may be important.

Primary school teachers and social studies teachers stated that students had difficulties in learning the concept of democracy, which is an abstract concept (Er, Ünal and Özmen, 2013; Toprak and Demir, 2017). Likewise, when studies on defining the concept of democracy are examined, the studies mostly revealing that students are unsuccessful (Fidan, 2009; Doğan, 2007; Kaya, 2011; Kılıç, 2015) are remarkable despite the studies finding students successful (Karatekin and Elvan, 2016). However, what is important here is how the concept is understood by teachers and how it is transferred to students.

It was revealed that the concept of democracy was mostly associated with elections and voting by primary school students (Yılmaz and Çeltikçi 2013). Similarly, it was observed that the dimension of elections came to the forefront in the studies conducted on primary school teachers and social studies teachers (Habiboğlu, 2009; Bektaş, 2013). A study revealed that more than half of the social studies preservice teachers established the definition of democracy only on popular sovereignty (Demircioğlu, Mutluer and Demircioğlu, 2011). Furthermore, it was also revealed that students confused the concepts of democracy and republic (Doğan, 2007; Soydaş, 2010; Kaya, 2011; Yılmaz and Çeltikçi 2013) and equality and justice (Dinç and Üztemur, 2016). Concerning democracy, while students' emphasis on freedom, equality, justice and the Republic of Turkey was found to be high, the emphasis on responsibility and patriotism was found to be low (Doğan, 2007; Karahan, 2009; Gürbüz and Gündüz, 2011; Kaya, 2011; Sadık and Sarı, 2012; Yılmaz and Çeltikçi 2013; Yalçın, 2018). In fact, in some studies, it was also revealed that students perceived the concept of limited freedom very well/well (Kuş, 2012).

It was observed that preservice teachers also highlighted the dimensions of sovereignty, elections, freedom (freedom of expression), equality, pluralism, polyphony, and independence. However, they neglected the dimensions of human rights, justice and tolerance (Habiboğlu, 2009; Demircioğlu, Mutluer and Demircioğlu, 2011; Sarı and Sadık, 2011; Sadık and Sarı, 2011; Bilici, 2012; Ekici, 2013).

When in-class practices were examined, it was emphasized by students that there was no positive environment in terms of gaining democratic values. When the details of these views were examined, issues such as the presence of an oppressive and commanding style of expression, the fact that students' awareness of participation was not sufficiently developed, insufficient practices, and the fact that subjects were theoretically covered and attempted to be taught through teacher behaviors were mentioned (Kıncal, 2000; Genç, 2006; Bilici, 2012). It was observed that election practices (such as electing a class president) for democracy teaching were also common (Habiboğlu, 2009; Sadık and Sarı, 2012). Studies emphasizing similar problems in the education of social studies teachers are remarkable (Sarı and Sadık, 2011).

## Conclusion And Discussion

*"What are the most important (multidimensional) concepts to be taught in Social Studies education?"* Of course, it is necessary to conduct a comprehensive study to determine these concepts. However, no social studies educator will doubt that the concept of democracy will be one of them. This study was conducted to determine the current teaching trajectory of the concept of democracy based on the textbooks. The most important result that emerged during the study process was the idea of developing a trajectory model for teaching or learning the concept of democracy. It is certainly not sufficient to review textbooks alone to develop this trajectory. It is necessary to consider many contexts such as theoretical studies in the literature, perceptions and attitudes toward democracy, experimental studies on teaching, studies focusing on students' learning processes, studies or curricula focusing on the views and experiences of teachers, the relevant skills and values, and social dimensions.

As a result of the study, it can be argued that four basic dimensions emerged in the teaching trajectory for the concept of democracy, which can be called democracy terminology, democratic individual, democratic state, and the history of democracy. However, the following model was developed in order to provide insight into future trajectory studies by considering the literature reviews together with the study results.

**Table 4.** Learning/Teaching Trajectory Model for the Concept of Democracy

| Literature | Teaching Trajectory | Individual Learning Route |
|---|---|---|
| • Cultural and language dimension<br>• Meaning dimensions<br>• Semantic gaps | • Democracy values<br>• Democracy skills<br>• Democratic individual<br>• Democratic family | • Perception of democracy<br>• Democratic attitudes<br>• Gender, family and other factors |

| | | |
|---|---|---|
| • Student dimension<br>• Teacher dimension<br>• Program and textbooks<br>• Theoretical research<br>• Applied studies | • Democratic school<br>• Democratic society<br>• Democratic state<br>• Democracy terminology<br>• History of democracy | • In-class and out-of-class learning experiences (methods, materials, etc.) |

Although the teaching trajectory, which was expressed in 4 dimensions in the study, had an increasingly intensified appearance, it was observed that it focused especially on the 6th and 7th-grade levels. A more developmentally planned teaching trajectory can be developed. The democratic individual (and community) dimension may be initiated at earlier levels, and the dimensions of democracy terminology and democratic state can also be addressed in older age groups. The history of democracy can be discussed with appropriate examples for all age groups.

Another remarkable result of the study was that the basis of the teaching trajectory should be developed through the learning trajectory. Although there are studies on students' perceptions and attitudes toward democracy in the literature, it can be said that studies that are more comprehensive and take into account different factors such as gender, family, and grade level are not sufficient to reveal the learning trajectory. Studies on attitudes reveal results that may contradict each other (Çalık, 2002; Ural, 2010; Yoğurtçu, 2010). According to the gender factor, it was observed that the democratic attitudes of female students were more positive in all of the studies (Kaldırım, 2005; Şimşek, 2011; Ural and Sağlam, 2011; Kontaş, Selçuk and Polat, 2016; Yüksel, Bağcı and Vatansever, 2013; Kuş and Çetin, 2014). However, there is a lack of studies focusing on how students make sense of the concept of democracy, especially longitudinally or at least cross-sectionally, and even revealing which dimensions they cannot make sense of. There are studies focusing on how students make sense of democracy. However, in these studies, it is observed that the concept of democracy was reduced to a single dimension, and a methodologically erroneous approach was followed. The problem of reducing the concept of democracy to one dimension causes the limited contribution of these studies to the learning trajectory. For example, a study argued that the concept of democracy was highly learned by 6th-grade students (94%). The fact that how students made sense of democracy was measured by the question "Which of the following is a form of government that takes place when people elect individuals who will govern them or dismiss them? (Kingdom/Democracy/Monarchy/Constitutionalism)" indicated that the concept was reduced to one dimension. This result shows that democracy is known as a form of government but does not give any idea about other dimensions (Doğrukök, 2004). In some studies, different dimensions of the concept were expressed by students. However, other dimensions were considered as misunderstandings due to the methodology followed (the problem of reducing to one dimension). For example, a study stated that 21% of the students defined the concept of democracy correctly, while 73% of them defined it incorrectly. Based on the definition in the MoNE (2011) textbook, the meaning of "being equal" was considered as the essence of the concept of democracy, and the definitions made based on it were considered correct. However, it was argued that those who associated their definitions with dimensions such as "republic, equality, freedom, TGNA, the right to elect and be elected, preparing a law, majority verdict and having a voice" had misconceptions (Kılıç, 2015). In addition to all of them, there are also studies investigating whether the concept of democracy can be explained by students with one/multidimensional dimensions (Yılmaz and Çeltikçi 2013). Such studies will be much more useful in determining the learning trajectory.

It can be argued that there are also similar problems in teacher education. However, since teaching in the classroom is a common activity carried out by the whole class, the teaching trajectory is not a process specific to the individual like the learning trajectory. When it is considered from the teacher's perspective, it can also be considered that this process can be unique (teacher-specific). In this respect, teachers' unique

teaching trajectories can also be examined as a subject of study, which may be important in terms of revealing the richness of the teaching process. The richness of the experience of many teachers can enrich the content of curricula, expand the boundaries of practices and recognize new perspectives.

To determine the learning/teaching trajectories of prominent concepts in social studies education together with extensive studies (such as master's and doctoral thesis or research projects) while determining both the learning trajectory and the teaching trajectory in social studies teaching may be more practical in terms of closing the gap in the literature, or it can be done according to learning domains or based on discipline (history, economy, sociology, etc.). The answer to the question of "What can the teaching trajectory of the Social Studies course be?" can also be searched within a broader framework.

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International Online Journal of Educational Sciences

ISSN: 1309-2707

# Examining the Relationship between School Administrators' Five-Factor Personality Traits and Their Levels of Work Engagement

*Research Article*

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**To cite this article:** Akuzum, C. (2021). Examining the relationship between school administrators' five-factor personality traits and their levels of work engagement, *International Online Journal of Educational Sciences*, *12* (5), 1620-1636.

ARTICLE INFO

*Article History*:

Received: 08.10.2021

Available online: 20.10.2021

ABSTRACT

In this study, it was aimed to examine the relationship between the five-factor personality traits of school administrators working in primary education institutions and their levels of work engagement. For this purpose, the relational screening model was used in the study. The universe of the research consists of 928 school administrators working in public primary schools and secondary schools in the central districts of Diyarbakır (Bağlar, Kayapınar, Sur, Yenişehir) in the 2021-2022 academic year. The sample consists of 478 school administrators, whose simple random sampling method was chosen. The Big Five Personality Traits Scale and Utrecht Work Engagement Scale were used as data collection tools in the study. In the research, the relationship between the five-factor personality traits dataset consisting of extraversion, agreeableness, conscientiousness, neuroticism and openness to development variables and the work engagement dataset consisting of vigor, dedication, and absorption variables was examined by canonical correlation analysis. As a result of the canonical correlation analysis, a significant relationship was found between the five-factor personality traits and work engagement, and the shared variance among the data sets was 50.8%.



**Keywords:**
Five-Factor Personality Traits, Work Engagement, School Administrator.

## Introduction

School administrators affect the lives of many individuals. According to Moffet (1979), leadership has vital importance for education. Because leadership, especially at the primary level, forms the basis of commitment to learning. School administrators' personality traits, their commitment to work and their vision significantly affect the school climate. According to Davis, Darling-Hammond, LaPointe, and Meyerson (2005), school administrators play a very important role in the guidance of successful schools.

Personality is the beliefs, thoughts, actions, behaviors and attitudes that are unique to the individual and make him/her different from others (Richards & Schmidt, 2002). According to Norman (1963), personality

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DOI: https://doi.org/10.15345/iojes.2021.05.020

is the most characteristic whole of the structures, behavior patterns, interests and tendencies, mental behaviors and abilities in the individual. Personality is the state of continuous interpersonal emotional, motivational and openness to experience of behavioral patterns that individuals reveal in different situations (McCrae & Costa, 1987). Personality is the opposite of an individual's physical, spiritual and mental characteristics to his behavior and lifestyle (Wortman, 1988). Personality is all of the features that distinguish individuals from each other (Feldman, 1996). Personality is the sum of the physical, emotional and social characteristics of the individual (Aiken, 1993). Personality is the whole of psycho-physical systems that determine the dynamic behavior and thought elements of individuals (Allport, 1961).

When we look at the studies on personality and the theories put forward in the literature, many different approaches are seen. One of the most widely accepted models in the literature is the "Five-Factor Personality Model" developed by McCrae and Costa (1987). Five-factor personality theory classifies many personality typologies and collects them into 5 main groups (Benet-Martinez & John, 1998). According to the five-factor personality model, personality consists of five basic factors. These factors consist of two opposite poles. These; extroversion-introversion, agreeableness-irritability, emotional stability-emotional instability (neuroticism), responsibility-disorganization, and openness to development-intelligence or immaturity (Antonioni, 1998; Costa & McCrae, 1992; John & Srivastava, 1999; McCrae & John, 1992).

*Extroversion* refers to the degree to which a person is friendly, sociable, talkative, and comfortable in meeting and talking to new people (Daft, 2008). Extraversion is a leadership trait. Individuals with this personality trait also developed positive emotions (Khalid & Sekiguchi, 2019). The "extraversion" personality trait, which is one of the five independent dimensions, refers to the social aspect of the individual. Individuals with this personality trait are characterized as social, talkative, friendly, fun, assertive, cheerful, excited, sociable, self-confident and friendly. At the opposite end of extroversion is introversion. Introverted individuals, on the other hand, are introverted, quiet, shy, distant, avoid going out in public and prefer solitude (Antonioni, 1998; Khalid & Sekiguchi, 2019). In addition, extroverted individuals are more likely to be dominant and ambitious than introverts (Khalid & Sekiguchi, 2019). According to Robbins and Judge (2013), individuals with high extrovert characteristics can express themselves well and are very good at teamwork as their communication skills are high. They are more successful in professions that require communication. Introverts, on the other hand, have little contact with people. They have low ability to lead a business and want to keep themselves in the background. They do not want exciting situations in their life. They like to spend time with animals or things rather than people. Caligiuri (2000) stated that extroverted individuals are more open to different cultures, have a more positive perspective, and are more prone to cultural adaptations compared to other individuals. Studies have shown that people with a high level of extraversion have higher performance in business life (Yurcu, 2016).

*Agreeableness* refers to the degree to which a person can get along well with others by being good-natured, cooperative, forgiving, compassionate, understanding, and trusting (Daft, 2008). The agreeableness personality factor is a factor that expresses "trust" (Bulut & Yıldız, 2020). Digman (1990) stated that this dimension refers to individuals who are thoughtful, friendly and tend to adapt. According to this factor, individuals with high agreeableness are avoidant of conflict, compliant, caring for other individuals, agreeable, honest, reliable, understanding, sympathetic, soft and warm; incompatible individuals are rude, uncooperative, incompatible, prefer to compete, quarrelsome, cold and suspicious (Antonioni, 1998; Khalid & Sekiguchi, 2019). Agreeableness represents the individual's livelihood and harmony in interpersonal relationships. Mild individuals are more sincere, cooperative and understanding in interpersonal relations, while non-mild individuals are stubborn, arguing and irritable. Agreeableness, in other words, peacefulness, is at the opposite end of disharmony. Individuals with high maladaptive personality traits are those who have a negative perspective, are rude, unsuccessful in social relations, do not like to cooperate, are vindictive,

ruthless, often angry and maintain self-interest-oriented relationships. According to Bruck and Allen (2003), agreeableness is the dimension in which individuals' benevolence, moderation, cooperation, emotional maturity, humility, flexibility, tolerance, self-sufficiency, and politeness can be measured. Costa, McCrae and Dye (1991) the dimension of agreeableness; they defined individuals as mild-mannered, honest, considerate of others, tolerant, reliable, adaptable, compassionate, obedient, and stated that they are a feature that can reflect the moral value of individuals.

*Self-control* refers to honesty, conscientiousness, and the degree to which a person is responsible, reliable, persistent, and success-oriented (Daft, 2008). Costa, McCrae and Dye (1991) stated that this dimension includes the studies to measure the control and discipline levels of individuals. This factor refers to self-discipline and commitment to the task. Costa and McCrae (1995) stated that people with a more dominant self-control feature are individuals who have self-discipline, know and fulfill their responsibilities, are determined and decisive, careful, organized, have a high sense of achievement, are hardworking and tend to be organized. Self-control refers to the plannedness and order shown in one's work. Therefore, these people will work with devotion and responsibility in every profession, as they will successfully complete all kinds of tasks. At the opposite end of the sub-dimension of responsibility, there is irresponsibility. Individuals with low responsibility personality traits are those who do not have a desire to work towards a goal in their lives, have low interests, are inadequate in setting goals, are irregular and undisciplined, do not plan, have no sense of duty, and do not trust (Bruck & Allen, 2003). Individuals with low self-control are careless, untidy and dispersed (Bulut & Yıldız, 2020). MacDonald (1995) evaluated this dimension with an adaptive framework in his study. He stated that this dimension represents being able to postpone requests, displaying a patient attitude in undesired tasks, being sensitive in details, being responsible and acting within the framework of trust.

*Emotional stability (neuroticism)* measures the continuity between neuroticism, emotional adjustment or stability, and emotional dissonance or neuroticism (Costa & McCrae, 1992). Among the five-factor personality traits, "career success" is the strongest. This factor has a positive effect on the career success of employees. Low emotional balance, that is, emotional instability, is called neuroticism, which causes negative emotions and moods. Neuroticism is associated with stress and anxiety-related tendencies. "Neuroticism" is a personality trait that manifests itself in emotional balance. Neurotic people have the characteristics of being constantly worried and nervous about a situation. However, individuals who are in emotional balance are more calm and patient individuals. According to Costa and McCrae (1992), the dimension of neuroticism refers to the lack of positive psychological adjustment and emotional balance. People with a tendency to experience fear, irritability, sadness, tension, anger, and guilt are at the height of neuroticism. Individuals scoring the lowest end of neuroticism are emotionally stable and cool (Costa & McCrae, 1992; John & Srivastava, 1999).

*Openness to experience (development)* refers to the degree to which a person has a wide range of interests and is imaginative, creative and willing to evaluate new ideas (Daft, 2008). While individuals who are open to experience tend to be artistic, intelligent, open-minded, creative and open to innovations, individuals with low openness to experience tend to be less creative, closed to new ideas, and traditionalist (Khalid & Sekiguchi, 2019). The "openness to experience" personality trait represents the individual's flexibility to different situations and openness to change. While people who are open to experience are more intellectual, curious and respectful of different opinions, individuals who are not open to experience display more conservative and conservative behaviors. Costa and McCrae (1992) described the characteristics of individuals in which this dimension is dominant as analytical, complex, liberal, unconventional, strong imagination, broad interests, courageous, change-loving, curiosity, originality, open to ideas, and sensitivity to art.

There are various studies in the literature on the five-factor personality trait. In the literature, the relationship between the personality traits of school administrators and their leadership styles (Korkmaz, 2006); the relationship between the altruistic behaviors of school principals and personality traits based on five

factors (Aşkar & Çınkır, 2021); the relationship between school administrators' five-factor personality traits and managerial resourcefulness (Karabatak, 2021); personality traits of educational leaders (Özcü, 2019); the relationship between school administrators' conflict management style preferences and five-factor personality traits (Yıldızoğlu & Burgaz, 2014); the relationship between the personality types of primary school administrators and leadership types (Göl-Battı, 2019) was examined. In the study conducted by DeNeve and Cooper (1998), it was determined that personality strongly predicted happiness and life satisfaction. Baltacı (2017) determined that there is a significant interaction between personality traits (emotional balance, responsibility, and compatibility) and procrastination behavior in his research, which deals with the effect of five-factor personality traits on procrastination behavior. Lord, De Vader, and Alliger (1986) conducted a meta-analysis of 27 studies that analyzed the relationships between personality traits and perceptions of leadership. The results supported expectations regarding perceptions of leadership in terms of gender (masculinity/femininity), intelligence, and dominance. The study reveals that personality traits are associated with leadership perceptions.

Behavioral commitment is expressed as the manifestation of a certain mental state that occurs when the employee is physically present at work by giving her/her energy to the job role (Schaufeli & Bakker, 2010). Kahn (1990) defines the concept of work engagement as the physical, mental and emotional engagement of employees with their job roles. Schaufeli and Bakker (2004b) define work engagement as an active, satisfied and positive mood towards work. Engaged employees make a great effort to do this because they identify with their work (Kahn, 1990, 1992). Employees who are integrated into their work have a high level of energy and participate in their work with enthusiasm (Bakker, Schaufeli, Leiter & Taris, 2008). The most widely used work dedication scale was developed by Schaufeli et al. and consists of three components: Vigor, dedication, absorption (Schaufeli et al., 2002a). Engaged employees are energetic and feel that they are doing their job effectively. Vigor is the ability to have a high level of mental resilience and energy while working, the willingness to make an effort towards one's work, and perseverance despite difficulties (González-Romá, Schaufeli, Bakker & Lloret, 2006; Schaufeli et. al., 2002). On the other hand, dedication is explained as a high level of work involvement and being proud of one's work and being challenged, strongly integrating with work and experiencing feelings of meaning, enthusiasm, enthusiasm, pride, overcoming difficulties. Assimilation is characterized by being able to fully concentrate on the work, to concentrate deeply on one's work, to be immersed, not to understand how time passes, to be reluctant to quit one's work (González-Romá et al., 2006; Schaufeli, et al., 2002).

There are studies in the literature that deals with the concept of work engagement (Kahn, 1992; Leiter, 2005; Schaufeli & Bakker, 2004a; Schaufeli et al., 2002b). Aydemir (2021), in his study on school administrators' and teachers' levels of work engagement and burnout, determined that there is a negative relationship between teachers' and administrators' work engagement and burnout levels. In his study, Tunçman (2019) examined the relationship between school administrators' levels of psychological capital and their levels of job engagement, and found that there was a positive and significant relationship between school administrators' levels of job engagement and psychological capital levels. Başaran (2018) aimed to determine the authentic leadership behaviors of school administrators and the level of teachers' work commitment according to various variables and to reveal the relationship between them, according to the perceptions of secondary school teachers.

Understanding the personality traits of school administrators and their relationship with work engagement will help identify the personality traits that help to be a job-integrated school administrator. No study has been found in the literature that deals with the relationship between school administrators' five-factor personality traits and their levels of work engagement. Therefore, it is thought that this study will contribute to the field. In this context, the main purpose of the research is to examine the relationship between

the five-factor personality traits of school administrators working in primary education institutions and their levels of work engagement. In line with this main purpose, answers to the following sub-objectives were sought:

1. According to the perceptions of school administrators, what is the distribution of the five-factor personality traits and levels of work engagement?

2. According to the perceptions of school administrators, is there a significant relationship between the five-factor personality traits and the levels of work engagement?

## Method

### Research Model

This research was designed in a relational screening model, as it examined the relationship between school administrators' five-factor personality traits and work engagement levels. Relational studies are studies conducted to determine the relationships between two or more variables and to obtain clues about cause and effect (Johnson & Christensen, 2014). At the same time, relational studies are also classified within descriptive studies because they are intended to identify the relationships between variables (Fraenkel & Wallen, 2006).

### Study Group

The universe of the research consists of 928 school administrators working in official primary and secondary schools in the central districts of Diyarbakır (Bağlar, Kayapınar, Sur and Yenişehir). In the study, 600 school administrators were reached with the simple random sampling method. As a result of the application, it was seen that 478 of the scales were suitable for analysis. 23 (4.8%) of the school administrators are female and 455 (95.2%) are male. In terms of age, 33 (6.9%) of the school administrators were in the age group of 30 or less, 204 (42.7%) were in the 31-40 age group, and 241 (50.4%) were in the 41 and over age group is located. In terms of job type, 175 (36.6%) of school administrators work as school principals, while 303 (63.4%) work as assistant principals. Considering the educational status, 9 (1.9%) of the school administrators have associate degree, 271 (56.7%) undergraduate, 194 (40.6%) graduate and 4 (0.8%) doctoral education has level. On the other hand, when the seniority of school administrators in management is examined, 142 (29.7%) have 5 years or less managerial seniority, while 183 (38.3%) 6-10 years, 74 (15.5%) 11-15 years and 79 (16.5%) of them have 16 years or more managerial seniority.

### Data Collection Tools

As data collection tools in the research; Personal Information Form, Big Five Personality Traits Scale and Utrecht Work Engagement Scale were used.

**Big Five Personality Traits Scale (BFPT):** Big Five Personality Traits Scale was developed by John (1990). The Turkish adaptation of the BFPT was carried out by Sümer and Sümer (2005) within the scope of the Turkey section of a study on the self-identification profiles and patterns of individuals in 56 countries (Schmitt et al., 2007). The BFPT has a total of 44 items in a five-point Likert-type rating. The scale has five sub-dimensions: extraversion consisting of 8 items (sample item: I am a talkative person. I am an introvert); agreeableness consisting of 8 items (sample item: I tend to find fault with others. I am helpful.); conscientiousness consisting of 9 items (sample item: I do a job perfectly. Sometimes I can be careless.); neuroticism consisting of 8 items (sample item: I am pessimistic, I am a sad person. I am relaxed, I do not get stressed.) and openness to development consisting of 10 items (sample item: I am original, I produce new ideas. I am curious about many things.). Based on the data obtained from this study, Cronbach-alpha values for each dimension in the scale and the whole scale were calculated. Cronbach-alpha reliability coefficients were .80 for extraversion; .71 for agreeableness, .72 for conscientiousness, .76 for neuroticism, .78 for openness to development, and .87 for the whole scale. Ebel and Frisbie (1991) stated that when making decisions about

individuals belonging to a group, a value of .65 would be acceptable as the minimum. According to the findings, it was decided that the sub-dimensions of the BFPT were reliable. In addition, the fit index results obtained from the confirmatory factor analysis (CFA) performed to determine the suitability of the model established for the theoretical structure of the BFPT are given in Table 1.

**Table 1.** CFA Results of the Big Five Personality Traits Scale

| *Fit Indices | $\Delta\chi^2$ | *df* | $\Delta\chi^2/df$ | RMSEA | SRMR | GFI | CFI | AGFI | NFI |
|---|---|---|---|---|---|---|---|---|---|
| Big Five Personality Traits Scale | 376.44 | 154 | 2.444 | .069 | .061 | .905 | .914 | .896 | .892 |

As a result of confirmatory factor analysis, it was seen that the critical ratio (c.r.) for the Big Five Personality Traits Scale in terms of multivariate (Mardia) values was 32,246. Since there were no items with a critical ratio greater than 10 in the BFPT, all items were included in the analysis in the next step. In addition, when Table 1 is examined, it is seen that the fit values for the scales are at an acceptable level (Byrne, 2001; Bayram, 2010; Kline, 2005; Şimşek, 2007).

**Utrecht Work Engagement Scale (UWES):** Utrecht Work Engagement Scale was developed by Schaufeli vd. (2002). Turkish adaptation, validity and reliability studies of UWES were performed by Eryılmaz and Doğan (2011). UWES has a total of 17 items in a five-point Likert-type rating. The scale has three sub-dimensions: vigor consisting of 6 items (sample item: I feel full of energy in my job. I feel strong and vigorous in my job.); dedication consisting of 5 items (sample item: I find my work meaningful and serves a purpose. I am willing and enthusiastic about my work.) and absorption consisting of 6 items (sample item: Time flies like water while working. I forget everything around me while working.). The grading options for the scale items were expressed as "1=Not at all suitable", "2=Not suitable", "3=A little suitable", "4=Appropriate", "5=Completely appropriate". Based on the data obtained from this study, Cronbach-alpha values for each dimension in the scale and the entire scale were calculated. Cronbach-alpha reliability coefficients for vigor were .89; it was calculated as .92 for dedication, .86 for absorption, and .95 for the whole scale. According to the findings, it was decided that the sub-dimensions of the UWES were reliable. In addition, the fit index results obtained from the confirmatory factor analysis (CFA) performed to determine the suitability of the model established for the theoretical structure of the UWES are given in Table 2.

**Table 2.** CFA Results of the Utrecht Work Engagement Scale

| *Fit Indices | $\Delta\chi^2$ | *df* | $\Delta\chi^2/df$ | RMSEA | SRMR | GFI | CFI | AGFI | NFI |
|---|---|---|---|---|---|---|---|---|---|
| Utrecht Work Engagement Scale | 297.86 | 108 | 2.758 | .072 | .067 | .914 | .903 | .887 | .900 |

As a result of confirmatory factor analysis, it was found that the critical ratio (c.r.) for the Utrecht Work Engagement Scale in terms of multivariate (Mardia) values was 25,712. Since there are no items with a critical ratio greater than 10 in UWES, all items were included in the analysis in the next step. In addition, when Table 2 is examined, it is seen that the fit values for the scales are at an acceptable level.

**Data Analysis**

The data obtained from the study were analyzed by SPSS and AMOS packaged software. Descriptive statistics and canonical correlation analysis were used as analysis techniques. Canonical correlation analysis is a multivariate analysis technique that attempts to determine the correlation between two sets of variables. The purpose of this technique is to examine the relationship between two sets of variables, if there is a distinction between dependent (criterion) and independent (prediction) variables, the effect of the independent variable on the dependent variable, and if there is no distinction between dependent and

independent variables (Karagöz, 2017). That is, the aim here is not to develop a model for the variables, but to explain the relationship between two sets of variables (Sümbüloğlu-Akdağ, 209). Although this explanation is similar to regression analysis, there are some important differences between the two methods. In particular, simple correlation analysis is a method that evaluates the bilateral relationship between two variables through the correlation coefficient, while canonical correlation analysis is a multivariate method that evaluates the relationship between two variable datasets containing two or more variables through linear components (Hair, Anderson, Tatham & Black, 1998; Özçomak & Gündüz, 2012). In addition, unlike other correlation analyzes, for canonical correlation analysis, the number of p variables in the first data set and q variables in the second data set should be two or more (p>1 and q>1) (Giray, 2011). In the current study, it was aimed to examine two latent variables defined with at least two observed variables. In addition, canonical correlation analysis was applied on the grounds that there was more than one dependent variable and all variables were included in the analysis at the same time. The statistical results of this analysis are significantly related if there is a linear combination between the dependent and independent variables (Stangor, 2011). In this study, using canonical correlation analysis, was aimed to explore the relationships between extroversion, agreeableness, conscientiousness, neuroticism, and openness to development of the BFPT and the dimensions of UWES's vigor, dedication, and absorption. Since there are 5 variables in one of the variable sets used in the research and 3 variables in the other, the maximum number of canonical variable pairs is 3. Accordingly, the analytical approach to the canonical correlation analysis, which is considered within the scope of the research, is given in Figure 1.

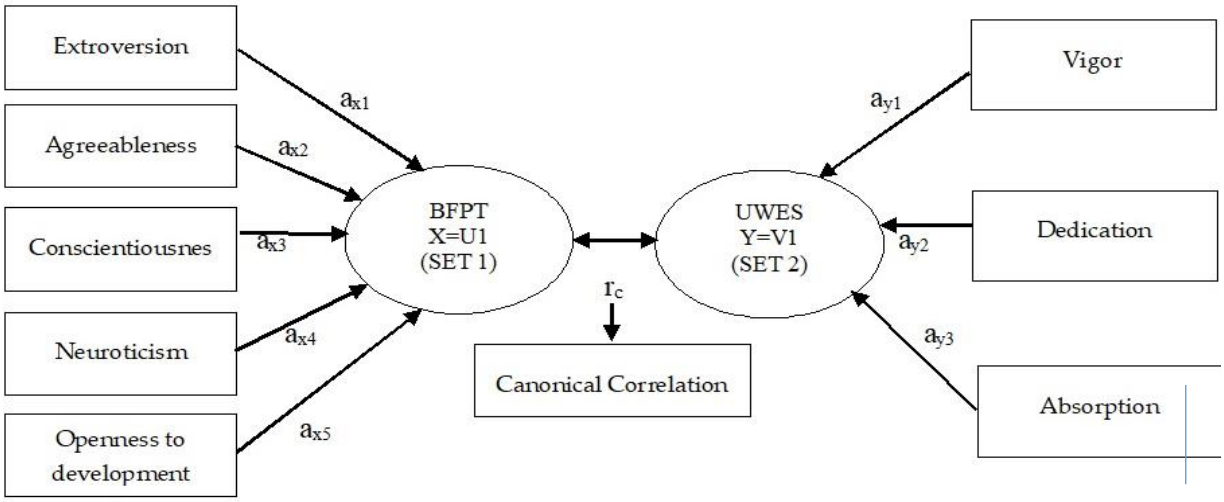


**Figure 1.** Analytical Approach to Canonical Correlation

According to Figure 1; $a_{x1}$, $a_{x2}$, $a_{x3}$… canonical loads for the X variable (BFPT), $a_{y1}$, $a_{y2}$, $a_{y3}$ for the Y variable (UWES), $r_c$ represents the correlation between the canonical variables.

In order to perform canonical correlation analysis, the data set must provide some assumptions. In order to apply the analysis, it is required that the relationship between canonical variables is linear, there is no multicollinearity problem, and the canonical variable pairs have constant variance between them, that is, their variances can be considered equal (Hair, Black, Babin, Anderson & Tatham, 1998). Whether there is a Multiple Linear Connection problem should be investigated separately for each data set, and it should be noted that the variables that can be observed between the sets are not highly correlated. The multiple normal distribution assumption is valid. Variables in variable sets do not have parametric conditions (Mai & Ness, 1999). The problem of multicollinearity between the variable sets of BFPT and UWES was first investigated based on the correlation coefficients between the variables. When Table 3 is examined, it is seen that the highest relationship between the variable sets is between the dimensions of vigor and dedication (r= .68; p< .00). The variable sets showing the lowest correlation were found to be between extraversion and dedication dimensions (r=.12; p <

.05). If one of the independent variables has a high correlation with the other or is a function of other variables, the problem of multicollinearity is encountered (Çokluk, Şekercioğlu & Büyüköztürk, 2010). In other words, in order to be able to say that there is a multicollinearity problem between the independent variables, the correlation value of the variables with each other should be at least .80 (Büyüköztürk, 2009). Accordingly, it can be said that there is no multicollinearity problem between the variable sets. Therefore, it was observed that the assumptions required for the canonical correlation in the data analysis were met.

In addition, the maximum likelihood estimation method was used to estimate the model parameters in the confirmatory factor analysis of the scale. In the evaluation of goodness of fit; RMSEA (root mean square of approximation errors), SRMR (root mean square of standardized residues), GFI (goodness of fit index), CFI (comparative goodness of fit index), AGFI (adjusted goodness of fit index), NFI (normed fit index), $\chi^2$/sd = CMIN/DF (chi-square/degree of freedom) and significance level (p) fit indices were taken into account.

## Findings

The mean, standard deviation and Pearson correlation coefficient values for the sub-dimensions of the Big Five Personality Traits Scale and the Utrecht Work Engagement Scale are presented in Table 3.

**Table 3.** Means, Standard Deviations and Correlation Coefficients of School Administrators' Scores Regarding the Dimensions of the Variables (n = 478)

| Variables | $\overline{X}$ | sd | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. Extraversion | 3,62 | 0,55 | 1 | | | | | | | |
| 2. Agreeableness | 4,03 | 0,39 | ,17** | 1 | | | | | | |
| 3. Conscientiousness | 4,01 | 0,42 | ,33** | ,55** | 1 | | | | | |
| 4. Neuroticism | 3,25 | 0,46 | ,32** | ,40** | ,16** | 1 | | | | |
| 5. Openness to Development | 3,79 | 0,47 | ,41** | ,58** | ,50** | ,24** | 1 | | | |
| 6. Vigor | 3,99 | 0,65 | ,28** | ,41** | ,43** | ,36** | ,31** | 1 | | |
| 7. Dedication | 4,13 | 0,71 | ,36** | ,49** | ,46** | ,56** | ,40** | ,68** | 1 | |
| 8. Absorption | 3,85 | 0,71 | ,12* | ,36** | ,34** | ,35** | ,29** | ,58** | ,55** | 1 |

*$p$<.05, **$p$<.00

As seen in Table 3, while school administrators' perceptions of the neuroticism dimension from the five-factor personality traits are at a medium-level, their perceptions of the other four dimensions such as extraversion, agreeableness, conscientiousness and openness to development are at a high level. In addition, it is seen that their perceptions in the dimension of agreeableness are at the highest level ($\bar{x}$=4.03). It can be said that the participation of school administrators in the dimensions of work engagement is at a high level. However, it is understood that their participation in the dimension of dedication is at the highest level ($\bar{x}$ =4.13), while their participation in the dimension of absorption is at the lowest level ($\bar{x}$=3.85). When the data in Table 3 were analyzed, the highest Pearson correlation coefficient between the BFPT and the sub-dimensions of the UWES was calculated between neuroticism and dedication (r = .56; p< .00). In general, it is seen that there are positive, medium-level and significant relationships between the dimensions of BFPT and UWES.

In the study, three canonical variables and three canonical correlation functions were obtained because the number of variables in the five-factor personality traits data set was five and the number of variables in the work integration data set was three. The results of Wilk's Lamda multivariate significance test for the statistical significance levels of the obtained canonical variables are given in Table 4.

**Table 4.** Correlation Coefficients of Canonical Variables, Wilks' Lambda and Significance Tests

| Roots | $r_c$ | $r_c^2$ | Eigenvalue | Wilks' Lambda | F | sd | P |
|---|---|---|---|---|---|---|---|
| 1 | 0,713 | 0,508 | 1,033 | 0,430 | 30,916 | 15 | 0,000 |
| 2 | 0,284 | 0,081 | 0,088 | 0,875 | 8,143 | 8 | 0,442 |
| 3 | 0,220 | 0,048 | 0,051 | 0,952 | 7,980 | 3 | 0,725 |

According to the findings in Table 4, the canonical model (function 1), which consists of the cumulative values of the three canonical functions obtained as a result of the analysis, is statistically significant [Wilks's $\lambda$=.430, $F_{(15)}$=30,916, p< .05]. It is seen that the second canonical function [Wilks's $\lambda$=.875, $F_{(8)}$ =8,143, p> .05] and the third canonical function [Wilks's $\lambda$=.952, $F_{(3)}$ =30,916, p> .05] remaining after the removal of the first canonical function with the highest correlation between canonical variables are not statistically significant. Also, according to the data in the table, the canonical correlation value for the first canonical function is .713. Accordingly, in the first canonical function, the five-factor personality traits and work engagement data sets share a variance of 50.8%. In the second canonical correlation, the canonical correlation value is calculated, which is not taken into account in the first canonical function and reveals the maximum relationship between two canonical variables. This value calculated for the second canonical function is .284, according to which the five-factor personality traits and work engagement data sets share a variance of 8.10% in the second canonical function. After removing the common variance shared by the five-factor personality traits and work engagement data sets in the first two canonical functions, it is seen that the canonical correlation value of the third canonical function is .0220. Accordingly, the common variance shared by the five-factor personality traits and work engagement datasets for the third canonical function is only 4.80%.

According to the results obtained so far, it can be said that the model is statistically significant and has an effect size that can be considered medium-level. Moreover, only the first canonical function can be interpreted, since only the first canonical function is statistically significant and is the first canonical function that most explains the variance between two sets of variables. Tabachnick and Fidell (2007) also state that only statistically significant canonical functions should be interpreted in canonical correlation analysis. Therefore, the first canonical variable pair has been examined and it is seen that this correlation set has a value of .713. The square of this value indicates the common variance explained between the dependent and independent variables. In this context, it was concluded that the first canonical correlation set shared a 50.8% variance.

Another question that needs to be answered in canonical correlation analysis is about how the variables in the data sets contribute to the relationship between canonical variables. In answering this question, standardized coefficients of canonical functions and structural coefficients are used. In this study, standardized coefficients and structural coefficients of the first canonical function, which are statistically significant among canonical variables, were examined to determine how much the variables in the five-factor personality traits data set (extraversion, agreeableness, conscientiousness, neuroticism, openness to development) and the variables in the work integration data set (vigor, dedication, absorption) contribute to the relationship between canonical variables. Accordingly, the standardized correlation coefficients of the variables in the first set are given in Table 5.

**Table 5.** Standardized Correlation Coefficients and Load Values of the Variables in the First and Second Sets

| **Variables** | $r_{c1}$ | |
|---|---|---|
| | **Correlation Coefficient** | **Load Value** |
| **First set (BFPTS)** | | |
| Extraversion | 0,170 | 0,544 |
| Agreeableness | 0,662 | 0,851 |
| Conscientiousness | 0,307 | 0,601 |
| Neuroticism | -0,165 | -0,682 |
| Openness To Development | 0,085 | 0,562 |
| *Explained Variance (%)* | *%43* | |
| **Second set (UWES)** | | |
| Vigor | 0,473 | 0,720 |

| | | |
|---|---|---|
| Dedication | 0,677 | 0,962 |
| Absorption | 0,133 | 0,609 |
| *Explained Variance (%)* | *%61* | |

According to Table 5, the equations for the canonical variables $U_1$ and $V_1$ obtained from the standardized coefficients can be formulated as in equality "1" and equality "2".

$U_1$ = .170*Extraversion + .662*Agreeableness + .307*Conscientiousness - .165*Neuroticism + .085*Openness To Development (1)

According to the equation equality given above, while the variable that contributed the highest to the formation of the $U_1$ canonical function was the agreeableness (-.662) variable, while the variable that contributed the least was openness to development (-.085). The other variables are respectively; conscientiousness (-.307), extraversion (-.170) and neuroticism (-.165) seem to contribute to the formation of the U1 canonical function.

$V_1$ = .473*Vigor + .677*Dedication + .133*Absorption (2)

According to the equation equality obtained from the standardized correlation coefficients of the variables in the second set, while the variable of dedication (.677) made the highest contribution to the formation of the $V_1$ canonical function, the variable that made the lowest contribution was the variable of absorption (.133).

Canonical loads of each set are taken into account in determining the variance shared by the variables with the data set they are in. These loads express the variance explained by the variables and show the mean of the squares of the canonical loads of the variable in the relevant set. The fact that the said values are greater than .30 indicates that the variable is a part of the relevant set (Tabachnick & Fidell, 2007). Accordingly, in terms of canonical load values, all the variables that make up the five-factor personality traits such as extraversion (.544), agreeableness (.851), conscientiousness (.601), neuroticism (-.682) and openness to development (.562) are considered as a part of the first set. In terms of the canonical load values of the variables in the second set, all the variables that make up the work integration, such as vigor (.720), dedication (.962) and absorption (.609), are also considered as a part of the second set.

Loads and correlation values of canonical variables considered within the scope of the research are also summarized in Figure 2.

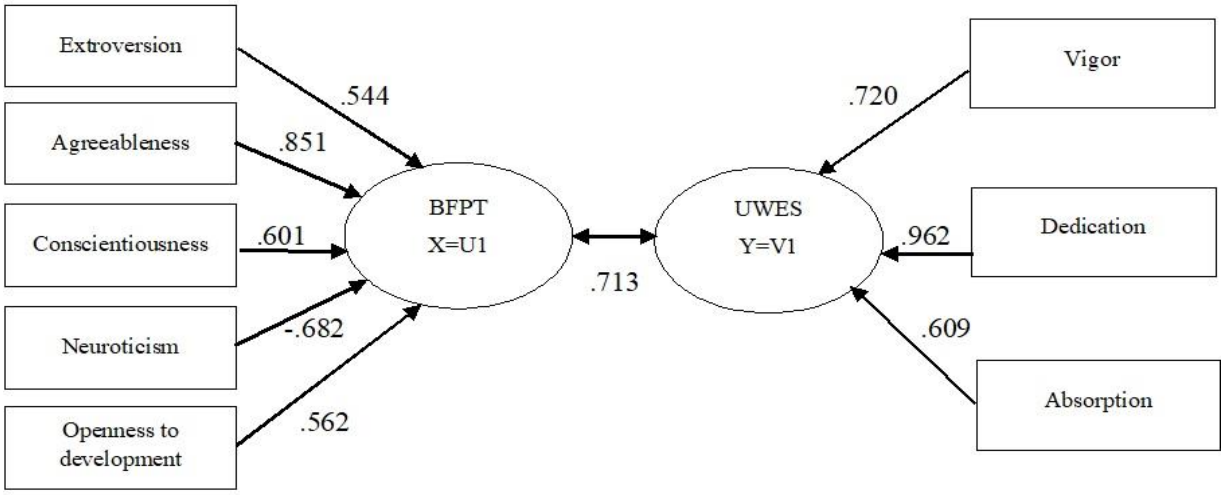


**Figure 2.** Structural Coefficients and Correlation Value of the First Canonical Pair Between BFPT and UWES

## Discussion and Recommendations

In this study, the relationship between school administrators' five-factor personality traits and their levels of work engagement was examined by canonical correlation analysis. As a result of the analysis, while school administrators' perceptions of the neuroticism dimension from the five-factor personality traits are at a medium-level, their perceptions of the other four dimensions such as extraversion, agreeableness, conscientiousness and openness to development are at a high level. In addition, it is seen that their perceptions in the dimension of agreeableness are at the highest level. Based on this finding, it can be said that the personality dimension of agreeableness is dominant in school administrators. School administrators' high scores on this dimension show that they mostly think of others, are honest and reliable, behave tolerantly and modestly towards others, work in harmony and cooperation with others, and do not hesitate to make sacrifices when appropriate. Agreeableness personality trait, unlike the other five-factor personality traits, can cause individuals to sacrifice their career plans to please other individuals. This situation can negatively affect the career success of individuals (Khalid & Sekiguchi, 2019). Similar to this finding, in the study conducted by Yıldızoğlu and Burgaz (2014), it was seen that the most dominant feature of school administrators is agreeableness, followed by openness to improvement, self-control/conscientiousness, extraversion and emotional inconsistency (neuroism). Similarly, in the study of Aşkar and Çınkır (2021), when the dominant personality traits of school principals based on five factors were examined, it was seen that they got the highest score from the agreeableness dimension and the lowest score from the neuroticism dimension. According to Mount, Barrick, and Stewart (1998), people with a dominant feature of adaptability are more successful especially in professions in the service sector due to their high empathy skills and being reliable people. The score obtained from the agreeableness dimension is followed by self-control, extraversion and openness to experience, respectively. In Karabatak's (2021) study, it was seen that the most dominant personality trait of school administrators is responsibility, followed by agreeableness (adaptation), extraversion, neuroticism, and openness to experience (development). In the study conducted by Baltacı (2017), the most dominant personality trait of school administrators was emotional stability, followed by conscientiousness, agreeableness, extroversion and openness to experience. Özdemir et al. (2020) found that the most dominant personality trait of school administrators is conscientiousness (self-control).

The personality dimension that the school administrators who participated in the research gave the lowest score is neuroticism. School administrators stated that they exhibited the behaviors included in the neuroticism dimension at a medium-level. This finding shows that the school administrators participating in the research are emotionally consistent and balanced. Similar to this finding, in the study of Yıldızoğlu and Burgaz (2014) and Çalık, Çoban and Özdemir (2019), the personality dimension that school administrators gave the lowest score was neuroticism. In this dimension, low scores of school administrators will have positive contributions to our education system. Because individuals who score high on the neuroticism dimension are anxious, fussy, restless and pessimistic. The most important reason why they do not exhibit neurotic personality traits may be that they do not want to affect the school climate negatively. If a school administrator gets a high score on this dimension, it can be said that this administrator will have difficulty in dealing with organizational conflicts and stress.

In addition, as a result of the research, it was determined that the participation of school administrators in the dimensions of work integration was at a high level. However, it is seen that their participation in the dimension of work dedication is at the highest level, while their participation in the dimension of work concentration is at the lowest level. The high perception of job dedication by school administrators includes thinking that the work they do is meaningful, believing that it serves a purpose, and being proud of their work. This is good news for schools. Because school administrators who dedicate themselves to their profession can increase their productivity and the quality of education and training by giving their full

capacity to their jobs. It can be said that this situation may be reflected in the success of the school. Contrary to this finding, Tunçman's (2019) study found that school administrators' scores on the "concentration on work" sub-dimension were high, with an average of 3.67.

As a result of the research, it is seen that there are positive, medium-level and significant relationships between the five-factor personality traits and the dimensions of the level of work engagement. This situation shows that the personality traits of the school administrator also affect the level of integration with the work. Therefore, their personality traits may support or hinder the school administrator's integration with the work. This result is an indication of how important the personality traits of school administrators are. For this reason, it may be suggested to use five-factor personality trait scales while conducting interviews in school administrator appointments.

In the canonical model consisting of the cumulative values of the canonical functions obtained from the canonical correlation analysis, the common variance shared by the five-factor personality traits and work engagement level data sets was calculated as 71.3%. This significant relationship between the five-factor personality traits and the level of job engagement reveals that school administrators' five-factor personality traits are effective on their job engagement levels. In addition, as a result of the research, a positive and significant canonical relationship was found between the five-factor personality traits of school administrators and their levels of work engagement. Accordingly, it was determined that there was a positive relationship between the variables of extraversion, agreeableness, conscientiousness and openness to development in the five-factor personality traits dataset and the variables in the work integration dataset. Therefore, it is understood that school administrators with high five-factor personality traits have higher levels of work engagement. Work integration refers to the state of presenting the physical, emotional and mental energies of the individual to the work he/she is doing while working. Here, the dedicated individual is high-energy, fully engaged in his/her work, and enjoys working and working as if it were part of a game. Therefore, the level of work integration of the school administrator who has the personality traits of extroversion, agreeableness, conscientiousness and openness to development will also increase. On the other hand, a negative relationship was found between the neuroticism variable in the five-factor personality traits dataset and the variables in the work engagement dataset. This shows that as the neurotic personality level of school administrators increases, their level of work engagement decreases. Similar to this finding, Langelaan et al. (2006) found that individual differences make a difference in terms of work engagement. They found that engaged workers had lower levels of neuroticism and higher levels of extraversion. Likewise, Bono and Judge (2004) and McCrae and John (1992) revealed in their studies that administrators who exhibit neurotic personality traits have negative effects on the vision, mission and culture of the organization. Neurotic personality trait has a negative effect on the career success of employees (Khalid & Sekiguchi, 2019). Compared to neurotic individuals, extroverted individuals are more likely to experience vigor, one of the key dimensions of work engagement (Brief & Weiss, 2002). DeNeve and Cooper (1998) concluded that the neuroticism personality trait in the five-factor personality theory is the strongest predictor of negative affect, happiness, and life satisfaction. Neurotic individuals tend to be moody, irritable, depressed, nervous, and worry too much. Neurotic individuals are those who experience a lot of emotional inconsistency in their lives, are anxious, depressed, and have a negative self-perception. This situation causes them to experience many negative emotions in their lives. The emotional inconsistency of school administrators also negatively affects their work commitment.

In our country, school administrator appointments are made according to selection exam score, interview, career and merit. Interviews are conducted by the commissions determined by the National Education Directorates for the assignments of school administrators, and the administrators who will work in the schools are determined by the knowledge, attitudes and behaviors they display in these interviews. Although managerial selections are made by interview commissions, the emotional balance characteristics of

people who aspire to managerial positions are generally ignored or cannot be determined. This situation causes various problems between administrators, teachers and parents in schools and causes schools to become unable to fulfill their basic functions. When choosing a school administrator, it is important to choose people with emotional balance who can do this task. Creating a positive climate in the school requires administrators with a balanced emotional identity. The education system can be brought to a more balanced structure by identifying those who have emotional balance problems among school administrators and removing them from the system. For this purpose, character analysis of public and private school administrators should be made in cooperation with the Ministry of National Education, the Ministry of Health and universities, and it may be recommended to obtain character ID cards or similar documents for administrators.

**Limitations**

As in any study, this study has its limitations. One of the limitations of this research is that it included an analysis based on quantitative data. Based on this issue, future research can go one step beyond this study by making use of qualitative data such as observation and interview, as well as quantitative data. In this way, more in-depth information can be reached by developing a multidimensional perspective. For this reason, it is considered important to conduct researches in which qualitative data are obtained.

This study was designed in a narrow sample across the province of Diyarbakır, with quantitative analyzes and comparisons made on the opinions of school administrators. Larger quantitative designs including different provinces and qualitative designs or longitudinal studies to be conducted on different sample groups can make up for an important deficiency in the literature. The fact that many professional groups are working in the provincial and central organizations within the education system can offer diversity in sample selection for future studies. In addition, different results can be obtained with different qualitative and quantitative measurement tools.

**Conclusion**

1. While school administrators' perceptions of the neuroticism dimension from the five-factor personality traits are at a medium-level, their perceptions of the other four dimensions such as extraversion, agreeableness, conscientiousness and openness to development are at a high level.

2. The personality dimension that the school administrators who participated in the research gave the lowest score is neuroticism.

3. It was determined that the participation of school administrators in the dimensions of work integration was at a high level.

4. It is seen that there are positive, medium-level and significant relationships between the five-factor personality traits and the dimensions of the level of work engagement.

5. In the canonical model consisting of the cumulative values of the canonical functions obtained from the canonical correlation analysis, the common variance shared by the five-factor personality traits and work engagement level data sets was calculated as 71.3%.

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