Mental Models of Prospective Visual Arts Teachers toward Visual Arts Education

Research Article

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ARTICLE INFO	ABSTRACT
<p><i>Article History:</i></p> <p>Received: 13.07.2020</p> <p>Available online: 30.01.2021</p>	<p>This study aims to investigate the mental models of prospective visual arts teachers toward visual arts education. In the study, which employed a single case study design, one of the qualitative research designs, 97 prospective visual arts teachers were included as participants. Based on the aim of the study, data from various sources of data were collected by using the draw-and-write method. In terms of teachers, students, and classroom environments, nine behaviors were investigated and each behavior was assigned with a code. Within this framework, visual arts teachers' drawing criteria (VATD-C) were determined. The data were analyzed within the framework of the codes and VATD evaluation criteria. As a result of the findings that were obtained, it was concluded that the mental models of 54 prospective teachers were placed in the student-centered education model while the mental models of 43 prospective teachers were placed in the teacher-centered education model category. According to the variable of gender, it was determined that prospective teachers had different beliefs toward visual arts education. Additionally, it was observed that the drawings of prospective teachers in the student-centered education model were increased as the grade levels advanced. Different images were found in the drawings that reflected the student and teacher-centered education model. It is suggested that programs that train visual arts teachers should be specifically planned in a way that eliminates false beliefs toward visual arts education, and environments that include student-centered education experiences should be provided.</p>
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Introduction

One of the aims of education faculties is to develop the identities of prospective visual arts teachers, who will be the teachers of the future, toward the profession of teaching gradually. The knowledge that is acquired in education faculties by prospective teachers, affects how arts education will be presented in classroom environments in the future. Additionally, the personal beliefs of teachers regarding visual arts education have strong effects on their practices in classrooms (Bullock & Galbraith, 1992). Therefore, the

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personal beliefs of teachers are significant factors in determining their teaching methods (Finson, Pedersen, & Thomas, 2006). For teachers to conduct visual arts education in student-centered learning environments, it is required to develop their beliefs on this subject positively. This is because the personal beliefs of individuals is an important indicator of their behaviors (Bandura, 1986).

Teachers graduate from education faculties with various knowledge and beliefs (Simmons et al., 1999). In the program where prospective visual arts teachers receive their education, their beliefs toward visual arts education can be determined with various methods. Accordingly, if the beliefs of prospective teachers toward visual arts education are determined and made more positive during the program, their professional development in teaching can change positively. In numerous studies, it was observed that the beliefs of prospective teachers regarding lesson teaching changed during the education program where they received their education (Mensah, 2011; Minogue, 2010; Ucar, 2012). Therefore, education faculties should consider the beliefs of prospective regarding teaching and learning (Ucar, 2012).

Researchers stated that insight into prospective teachers' perceptions and beliefs toward lesson teaching can be gained by investigating the mental models of them (Finson et al., 2006; Mensah, 2011; Thomas, Pedersen & Finson, 2001; Wilke & Losh, 2012). Mental models express the internal and cognitive representations of phenomena in individuals (Wilke & Losh, 2012). Thus, mental models enable us to understand individuals' beliefs and to make predictions about their behaviors (Norman, 1983). Accordingly, to determine the beliefs of prospective teachers toward visual arts education and to make predictions about their practices in the future learning-teaching process, mental models can be used.

Drawing is an effective method in determining the mental models of prospective teachers (Buldur, 2017; Mensah, 2011; Minogue, 2010; Thomas et al., 2001). The method of drawing presents a richer data source compared to other methods (Hancock & Gallard, 2004; Minogue, 2010). This method presents an alternative method to determine the perceptions of prospective teachers about teaching and learning experiences. In a study conducted by Weber and Mitchell (1996), it was stated that data could be collected from prospective teachers in terms of developing their professional identities by using the drawing method. Within this scope, in the current study, the drawing method is one of the most effective ways in terms of determining the mental models of prospective visual arts teachers toward visual arts education. This method provides how prospective teachers can teach arts in classroom environments with a descriptive portrait.

When the literature on the subject was reviewed, it was observed that various studies employed free drawings as data collection tools and determined beliefs of prospective teachers toward teaching in classroom environments (Alkış Küçükaydın & Gökbulut, 2020; Buldur, 2017; Chiodo & Brown, 2007; Feyzioğlu, Feyzioğlu, & Küçükçingir, 2014; Go & Kang, 2015; Mensah, 2011; Minogue, 2010; Picker & Berry, 2001; Tatar, Feyzioğlu, Buldur & Akpınar, 2012; Thomas & Pedersen, 2003; Utley & Showalter, 2007; Weber & Mitchell, 1996; Yilmaz, Turkmen, Pedersen & Huyuguzel Cavas, 2007). However, it was observed that no study investigated the prospective teachers' beliefs toward visual arts education through pictures that were drawn as their mental pictures. This aspect of the study is important in terms of contributing to the literature.

This study aims to investigate the mental models of prospective visual arts teachers toward visual arts education. In parallel to this aim, the following questions were explored in the study.

1. Do the mental models of prospective visual arts teachers in visual arts education differ according to gender and grade levels?
2. How are the cognitive images of prospective visual arts teachers toward student-centered education?
3. How are the cognitive images of prospective visual arts teachers toward teacher-centered education?

Method

This study is a qualitative study that investigates the mental models of prospective visual arts teachers toward visual arts education. Qualitative studies attempt to understand what kind of meanings people attach to their experiences (Merriam, 2013). Within this framework, in the study, a single case study design was used based on the aim of the study. This design aims to describe in detail and thoroughly a phenomenon with a set framework by collecting data from various sources (observation, interview, visuals, etc.) (Creswell, 2007).

Study Group

The study group was formed from 97 prospective teachers, who studied in art teaching in two state universities in 2019-2020. The prospective teachers consisted of 46 females and 51 males. The study group included 22 students from 1st grade, 26 students from 2nd grade, 23 students from 3rd grade, and 26 students from 4th grade. Within this scope, in the study, the study group was determined with the maximum variation method, which is one of the purposeful sampling methods. With this method, it was aimed to include individuals with various characteristics in the study group (Merriam, 2013).

Data Collection Tool

According to Creswell (2007), it is important to collect data from various sources in a case study. Accordingly, based on the aim of the current study, the drawing-and-writing method was used to collect data from various data sources. In studies, the drawing method is an effective one in terms of determining mental models of participants toward a certain subject (Adoniou, 2013; Mensah, 2011). When the literature was reviewed, it was observed that numerous studies used the drawing method to determine interests, attitudes and perceptions of participants toward a certain subject (Adoniou, 2013; Chiodo & Brown, 2007; Mensah, 2011; Thomas et al., 2001; Weber & Mitchell, 1996)

Data Collection Process

The participants were asked the question, "How should an ideal visual arts teacher be?". The participants were given time to think. Then, they were asked to draw themselves as visual arts teachers who teach in classrooms. In parallel to this aim, various materials (A4-sized drawing papers, pencils, etc.) were provided. The participants were asked to fill in their demographic information and to explain their drawings within the framework of the questions "What is the teacher doing?" and "What are the students doing?" on the back of the papers. The prospective teachers completed these practices in approximately 40 to 50 minutes in classroom environments. For the study, the ethical board permission (Appendix: 1) was obtained. Additionally, the prospective teachers participating in the study were chosen according to the principle of voluntarism.

Data Analysis

The data collected via the draw-and-write method were analyzed to determine the mental models of prospective visual arts teachers toward visual arts education. Within this framework, the drawings collected from the prospective teachers were not evaluated according to artistic skill. The data obtained via the drawing method can be analyzed by considering them as texts (Mensah, 2011). Accordingly, the visual data that were collected were analyzed by the content analysis method. The content analysis method covers the coding of the data and the determination of the categories (Merriam, 2013).

According to the aim of the study, the data were decided to be examined by two experts of visual arts education, who had Ph.D. The experts first conducted a preliminary analysis of whether the data that were collected were drawn suitably to the aim of the study and eliminated the data that were unrelated. In the second step, the drawings of the male prospective teachers were formulated as M1 and M2 while the drawings of the female prospective teachers were formulated as F1 and F2. In the third step, to determine the mental

models of the prospective teachers, 9 behaviors, in terms of teacher, student, and classroom environment, were investigated by utilizing the studies conducted by Thomas et al. (2001) and Mensah (2011). Each behavior was identified as a code. In terms of teachers, images, which covered the physical stance that stood in the center of the classroom, the physical stance that did not stand in the center of the classroom and that was in motion, and the physical stance that used visual materials (blackboard, smartboard, and images), were coded. In terms of students, images, which covered the physical stance that was in a listening mood passively, the physical stance that answered the questions of the teacher actively, and the physical stance that covered the active communication with other students, were coded. Lastly, in terms of the classroom environment, the images, which covered classrooms that were organized in rows and columns, classrooms that were organized as workshops, classrooms that were organized as circles or U-shapes, and classrooms that were depicted as other spaces other than classroom environments, were coded. The codes that were determined in terms of students, teachers, and classroom environments were classified into two categories (student-centered education and teacher-centered education). The explanations that were written by prospective teachers on the back sides of the drawings were used to support and to clarify the drawings. Within this framework, the VATD evaluation criteria were determined and presented in Table 1.

Table 1. VATD evaluation criteria

Category	Explanation
Teacher-centered	The images, which covered the physical stance that stood in the center of the classroom in terms of teachers, the images which covered the physical stance in a listening mood in a passive way in terms of students, and the images which covered the physical stance that was organized in rows and columns in terms of classroom environments, were evaluated. Then, the drawings that covered at least two of these images were placed in the teacher-centered category.
Student-centered	The images, which covered the physical stance that was not in the central location and that was in motion in the classroom or the physical stance that used visual materials (blackboard, smartboard, and images) in terms of the teachers, the images which covered the physical stance where students actively answered teachers' questions and communicated with other students in terms of students, and the images which covered the physical stance that covered classrooms organized as circles and in U-shapes or spaces other than classrooms in terms of classroom environments were evaluated. The drawings that covered at least two of these images were placed in the student-centered category.

To ensure the reliability of the study, the consistency between the coders were examined. The reliability of the opinions of experts was determined as 93%. The reliability of the opinions was calculated by the formula "Reliability = Agreement/ Agreement + Disagreement" (Miles & Huberman, 2015). The data that was coded in different ways were discussed by two experts and agreements were made. Additionally, to improve the validity and reliability of the study, the written materials were used with visual data, and a data diversification was made. Accordingly, the data were used to confirm each other (Yıldırım & Şimşek, 2011). In the current study, the written statements regarding the pictures drawn by the participants were presented with direct quotes without any spelling or grammar corrections.

Findings

Findings regarding the 1st Subproblem, "Do the mental models of prospective visual arts teachers in visual arts education differ according to gender and grade levels?"

Table 2. The distribution of the mental models of prospective visual arts teachers toward visual arts education according to gender and grade levels

Variable	f	Student-Centered Education	Teacher-Centered Education
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Gender	Female	f	28	18
	Male	f	26	25
Grade level	1 st Grade	f	7	15
	2 nd Grade	f	10	16
	3 rd Grade	f	15	8
	4 th Grade	f	22	4
Total		f	54	43

As can be seen in Table 2, 54 prospective teachers made drawings that reflected the student-centered education model while 43 prospective teachers made drawings that reflected the teacher-centered education model. The mental models of most of the female prospective teachers ($f=28$) were included in the student-centered education model. On the other hand, it was observed that the numbers of drawings made by the male prospective teachers were close to each other in terms of student-centered ($f=26$) and teacher-centered ($f=25$) education models. When the distribution of the mental models of prospective teachers toward visual arts education was examined in terms of the grade level, it was observed that most of the prospective teachers from 3rd grade ($f=15$) and 4th grade ($f=22$) made drawings that reflected the student-centered education model. It was also observed that the prospective teachers from 1st grade ($f=7$) and 2nd grade ($f=10$) made more drawings that reflected the teacher-centered education model. When the mental models of prospective teachers were examined in detail according to grade level, it was observed that the drawings that were made toward the student-centered education model were increased as the grade levels increased.

Findings regarding the 2nd subproblem, “How are the cognitive images of prospective visual arts teachers toward student-centered education?”

Table 3. Cognitive images of prospective teachers toward student-centered education

Themes		Codes	Drawing f
Teacher		The physical stance that stands in the center of the classroom	2
		The physical stance that is not in the center of the classroom and that is in motion	52
		The physical stance that uses visual materials (blackboard, smartboard, and images)	26
Student		The physical stance that is in the mood of listening in a passive way	0
		The physical stance that answers the questions of the teacher actively	54
		The physical stance that communicates with other students actively	17
Classroom environment		That classroom organization that is organized in rows and columns	25
		The classroom organization that is organized as a workshop	21
		That classroom organization that was organized as circles and in U-shapes and other spaces than classroom environments	8

When the drawings in this category were evaluated in terms of teachers, it was observed that the drawings of 52 prospective teachers included images that described the physical stance where the visual arts teachers were in motion in front of the classroom. When they were examined in terms of students, it was determined that all of the drawings that reflected the student-centered education described the stance where students answered teachers' questions actively ($f=54$). When they were examined in terms of classroom environments, most of the drawings in this category described the classroom environments in rows and columns ($f=25$). Additionally, 21 prospective teachers draw images that organized classrooms as workshops while 9 prospective teachers draw images that described classroom environments that were organized as circles and in U-shapes or as spaces other than classroom environments. The examples of student-centered education drawings that were determined according to the framework of the VATD criteria of prospective teachers were presented with images in Table 4.

Table 4. Examples of the drawings of prospective teachers toward student-centered education

Several examples of the written statements toward the drawings of prospective teachers were presented below.

F11: *“The teacher is making drawings with students. The teacher is explaining by showing, not by saying things. Students are trying to learn by practicing what the teacher is showing.”*

M8: *“The teacher is explaining design size to students by using different materials. Students are trying to learn by practicing the size technique that the teacher showed.”*

F30: *“In this drawing, there is a teacher who is conducting a watercolor exercise entertainingly and effectively with students. The teacher is occasionally conducting close interventions for students to comprehend the watercolor technique better. Students are trying to reinforce what they learn by practicing.”*

Findings regarding the 3rd subproblem, “How are the cognitive images of prospective visual arts teachers toward teacher-centered education?”

Table 5. Examples of the drawings of prospective teachers toward teacher-centered education

Themes	Codes	Drawing (f)
Teacher	The physical stance that stands in the center of the classroom	33
	The physical stance that is not in the center of the classroom and that is in motion	10
	The physical stance that uses visual materials (blackboard, smartboard, and images)	0
Student	The physical stance that is in the mood of listening in a passive way	43
	The physical stance that answers the questions of the teacher actively	0
	The physical stance that communicates with other students actively	0
Classroom environment	That classroom organization that is organized in rows and columns	31
	The classroom organization that is organized as a workshop	12
	That classroom organization that was organized as circles and in U-shapes and other spaces than classroom environments	0

When the drawings toward teacher-centered education were evaluated in terms of teachers, it was observed that most of the drawings included images that described visual arts teachers in the physical stance that stood in the center of the classroom ($f=33$). When they were investigated in terms of students, all of the

drawings toward this category covered images that described students in listening moods in a passive way ($f=43$). When they were investigated in terms of classroom environments, most of the drawings toward this category covered images that described classroom environments that were organized in rows and columns ($f=31$). Additionally, it was observed that 12 students draw classroom organizations that were organized as workshops. The examples of teacher-centered education drawings that were determined according to the framework of the VATD criteria of prospective teachers were presented with images in Table 6.

Table 6. Examples of the drawings of prospective teachers toward teacher-centered education

Several examples of the written statements toward the drawings of prospective teachers were presented below.

F22: *"The teacher is making the students listen to painters' lives. Students are listening to the teacher by sitting at their desks."*

M40: *"The teacher, namely, me, gave a subject to the students as always by entering the classroom. The students are listening to me just as always. They are trying to draw the subject I gave them."*

M24: *"The teacher is explaining techniques of drawing lines to the class. Students are listening to the teachers without making a sound."*

Discussion, Conclusion, and Suggestions

As a result of the findings obtained within the scope of the first subproblem of the study, it was concluded that the mental models of 54 prospective teachers were included in the student-centered education model category while the mental models of 43 prospective teachers were included in the teacher-centered education model category. Thus, it can be stated that the prospective teachers in the study group had different beliefs and perceptions toward visual arts education. Similar results were observed in studies conducted by Chiodo & Brown (2007), which was conducted with prospective social sciences teachers, and Klinghammer, Rabe, and Krey (2016), which was conducted with prospective science teachers. In a study conducted by Yılmaz et al. (2007), which was conducted with prospective science teachers, it was observed that most of the prospective teachers made drawings that described the teacher-centered education model.

It was concluded that most of the female prospective teachers ($f=28$) made drawings that reflected the student-centered education model. On the other hand, it was determined that the numbers of male prospective teachers that belonged to the student-centered ($f=26$) and teacher-centered ($f=25$) education models were close to each other. This result demonstrated that prospective visual arts teachers had different beliefs toward visual arts education according to gender. According to Minor, Onwuegbuzie, Witcher, and James (2002), gender had a significant role in building perceptions of prospective teachers regarding effective teaching

characteristics. In a study conducted by Elmas, Demirdöğen, and Geban (2011), which was conducted with prospective chemistry teachers, it was observed that the drawings that reflected the student-centered education model and that were made by female prospective teachers were more. However, in a study conducted by Tatar et al. (2012), which was conducted with prospective science teachers, it was stated that there was not a significant difference between the mental models of prospective teachers according to gender.

It was concluded that the drawings of prospective teachers, which were the toward student-centered education model, were increased as the grade levels increased. This conclusion indicated that the mental models of prospective teachers toward visual arts education shifted from the teacher-centered model to the student-centered education model as the grade levels of prospective teachers increased. It can be stated that the education that prospective teachers received was effective in the development of their beliefs toward visual arts education. The lesson that prospective teachers receive in the final grade, the teaching practice lesson, changes their performance positively (Caires, Almeida, & Vieira, 2012). It was observed that the conclusions obtained in studies conducted by Tatar et al. (2012) and Feyzioğlu et al. (2014) with prospective science teachers were coherent with the conclusions obtained in this study.

According to the findings regarding the second subproblem of the study, it was concluded that the prospective teachers mostly draw the physical stance where visual arts teachers were in motion in front of the classroom in terms of teachers, the physical stance where students actively answered teachers' questions in terms of students, and the physical stance where classrooms were organized in rows and columns in terms of classroom environments in the drawings that reflected the student-centered education model.

According to the findings regarding the third subproblem of the study, it was concluded that the prospective teachers mostly draw the physical stance where visual arts teachers stood in the center of the classroom in terms of teachers, the physical stance where the students were in a listening mood passively in terms of students, and the physical stance where the classroom was organized in rows and columns in terms of the classroom environment.

It was observed that the images which described classroom environments in rows and columns in drawings that reflected student and teacher-centered education models were a majority. Additionally, it was determined that the images that described visual arts teaching in workshop environments were less compared to images that described them in rows and columns. It can be stated that this situation observed in the mental images of prospective teachers was related to their educational experiences before undergraduate education. Prospective teachers enter teacher preparation programs along with their beliefs, attitudes, and perceptions that were born and nourished from their previous experiences (Utle & Showalter, 2007; Virta, 2002). It can be stated that this situation bore traces of the classroom environments that were mostly organized in rows and columns in the previous experiences of prospective teachers before undergraduate education.

Based on the conclusions of this study, it is suggested that the beliefs of prospective visual arts teachers should be observed during the pre- and post-undergraduate periods. It is also suggested that visual arts teacher training programs should be planned in a way that specifically eliminates false beliefs toward visual arts education, and environments that include student-centered educational experiences should be provided. School practices of prospective teachers should be based on the student-centered education model. It is suggested that mental models of prospective visual arts teachers toward visual arts education should be investigated within the frameworks of self-efficacy beliefs and learning approaches.

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