# DETERMINING OF VISUAL ART TEACHER CANDIDATES' ATTITUDES CONCERNING DESIGN COURSES – THE CASE OF TURKEY

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**Abstract:**

This study was conducted to determine the attitudes of visual arts teacher candidates regarding design courses (Basic Design-I, Basic Design-II, Graphic Design, Industrial Design, Writing, etc.) in Turkey. This study employed an exploratory sequential mixed method design. This design involves the process that the researcher initially carries out a quantitative study and uses the results of the quantitative study in order to generate a more detailed structure of the study by means of qualitative research. Quantitative data were collected through a Likert type measurement called "Design Lessons Attitude Scale" developed by researchers with a descriptive screening method and qualitative data was collected through semi-structured interview forms. The universe of the research consists of 142 Visual Arts teacher candidates studying in the Department of Art Education at Ağrı İbrahim Çeçen, Atatürk, Çanakkale Onsekiz Mart, Dokuz Eylül, Erzincan Binali Yıldırım, Uludağ, Van Yüzüncü Yıl Universities in the fall semester of the 2019-2020 academic year. In the study, quantitative data obtained with personal information form were presented by taking their frequency and percentages. Descriptive statistical analyzes were performed in the analysis of the data and the data were determined as percentage, frequency, mean and standard deviation. One-way analysis of variance was used to test whether there was a significant difference in terms of points between the

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groups created. Analysis results were tested at $p < 0.05$ significance level. In order to analyze the data found after applying the semi-structured interview form, it was classified into categories by examining the qualitative data regularly and classifying by providing data coding. According to the data obtained as a result of the practice, they stated that the practices that the pre-service teachers made in the design courses enable them to think more creatively and differently, that these courses highlight the concepts of innovation, original and aesthetics for them, and also increase their problem-solving skills as well as design.

**Keywords:** visual arts, design education, art education

## 1. Introduction

The concept of contemporary education aims to increase creativity in students and to provide society with aesthetic skills, creative, original thinking, and productive people. One of the most important lessons in which these behaviors can be taught to individuals is the visual arts lesson. Therefore, visual arts education has an important place in contemporary education concepts and applications. The 21st century is a period in which the expectations regarding the individual qualities needed depend on social, economic, political and technological developments all over the world. Many international pieces of research, reports, and examinations reveal that the skills that individuals living in the 21st century should have to survive in business life are quite different compared to the previous century. These skills include solving problems, thinking creatively and differently, performing tasks and tasks; It refers to being able to handle some complex tasks by using sufficient knowledge and quality in certain contexts (Ananiadou & Claro, 2009). It is inevitable for art education to have an interdisciplinary structure while preparing the workforce with the skill and knowledge of using the high technology of the 21st century. It is stated that a curriculum that combines aesthetic and analytical ways of thinking to be prepared with an interdisciplinary study of art and science can lead to the development and improvement of both science and art (Fitzsimmons, 2011). Today, intensive applications are carried out in the USA and adapted to K-12 art/design classes and processed by an aesthetic based design process (Bequette & Bequette, 2012). Although the concepts of art and design are intertwined, they have a structure with several differences. Although their roots are fed from the same source, they follow different paths in the process. While design tries to solve the problems, it encounters at a certain time, this situation is uncertain in art. It is tried to find solutions to the problems encountered in the art without time limitation, but art sometimes has a structure that can even aim to create problems. While design aims to meet a specific problem or a determined need, art has no pragmatic purpose. Also, art has a structure based on inspiration regardless of a certain period. It is a very difficult phenomenon to plan ahead of time. While the design is expected to be suitable for the target audience, there is no such requirement in art. Due to its design structure, it cannot be outside the frame desired

from it, except for certain dimensions, there is no such limitation in art. An art and design education to be prepared by considering these differences can contribute to the training of individuals equipped with 21st-century skills. Design education is the study on the aesthetics and benefits of the elements in our daily life (Vande, 2010). Both the design process and the artistic/creative process have a certain thought and intended results. While artists represent an idea, concept or object using a plastic language with different materials, designers use their steps in the design process to solve problems (Figure 1), (President & Fellows Harvard College, 2003; Vande, 2011, p. 17). These design processes in design education can also be seen as a way for students to follow when faced with a problem.

Therefore, we can say that it is similar to the problem-based learning approach. It is an approach that aims to provide an experience by developing the skills of solving and understanding the problem specifically addressed in problem-based learning and by simulating the situations that individuals may encounter later. At the end of the problems made and solved with problem-based learning, when information and goals about learning products are given, a high relationship can be established with the studied area (Copland, 2000, p.535). Problem-based learning; is a learning approach that develops lifelong learning skills by increasing the ability of the individual to analyze and synthesize (Harland, 2002). Besides, Problem Based Learning is a teaching approach that develops a problem, confronts problem solvers with unstructured problems that reflect real-world problems, and also improves problem-solving skills with basic knowledge and skills (Stepien, Gallagher & Workman, 1993, p. 340). Design education also aims to prepare students for the future by using functional materials and functional designs with aesthetic concerns. In terms of the processes it follows, we can say that design education and problem-based learning is similar.



**Figure 1:** Processes applied in art and design education in many states in the USA
(Massachusetts Department of Education (2006). Massachusetts Science and Technology / Engineering Curriculum Framework. Malden, MA: MDOE.)
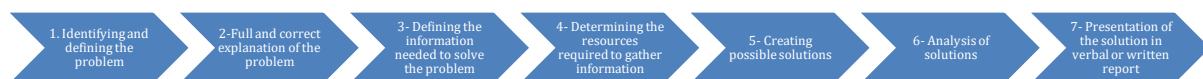


**Figure 2:** Processes of problem-based learning
(Captain and Korkmaz, 2001, p.185).

It can be said that real-life problems are used in both learning models that allow learners to use their critical thinking and problem-solving skills effectively. Both applications are similar in terms of being able to develop high-level skills, aiming to awaken the feeling of curiosity, as well as using multiple solutions or the ability to

determine the best possible solution in determining the problem. Design education witnesses an ongoing and ongoing debate with its paradoxes and ambiguity in a radical change to challenge the dilemma between art and science, emotion and thought, function and form, theory and practice (Aydınlı, 2015). Each new thought and approach produced within the changes and developments experienced has created an input for each other, leading to an interactive and dynamic design education process. Undoubtedly, this interactive process caused the design discipline to be fed from these disciplines due to its close relationship with many disciplines.

Therefore, the main consideration in this article is that the visual arts lesson should have a structure that develops individual learning, social responsibility, and creative problem-solving skills by combining art practice and design thinking. Turkey in the pre-university education existing program content in art and creativity related lessons and activities to be important enough not to students the basics of some hardware (aesthetic perspective, creative, critical and original thinking) is known to cause deprivation (Onur, 2016). Therefore, it has been emphasized that teacher education has a new structure in line with the needs of the future, which aims to provide creative and permanent solutions to the problems encountered. Turkey visual arts teacher education degree program within the design courses (Basic Design-I and II, Graphic Design, Industrial Design, Writing) place within the existing teacher training programs by examining the perceptions of prospective teachers for was discussed. In line with all these explanations, the problem of the study is "What is the attitude of visual arts teacher candidates towards design courses?" It was determined as depending on this problem sentence, answers to the following sub-problems were sought within the scope of the study. Visual arts teacher candidates;

1) What is their attitude towards design lessons?
2) Is there a meaningful difference in-class attitude towards design lessons?
3) What are their views on design lessons?

## 2. Material and Methods

In order to determine the visual arts teacher candidates' attitudes towards design lessons (Basic Design-I, Basic Design-II, Graphic Design, Industrial Design, Writing (typographic designs, etc.), the sequential exploratory mixed method was used. Creswell (2016) defined this method as the researcher collecting quantitative and qualitative data in two stages in order, and one data collection method follows and shapes the other instead of collecting data and combining the results at the same time. When the qualitative and quantitative research methods are used together in research conducted, the reliability of the research will be high since it will provide comparable results (Patton, 2015). The descriptive scanning method was used as a quantitative research method. Qualitative data in the study were obtained by using a semi-structured interview forms to determine the opinions of prospective teachers participating in the research in-depth.

## 2.2 Universe and Sample / Working Group / Participants

The universe of the research consists of 142 Visual Arts teacher candidates studying in the Department of Art Education at Ağrı İbrahim Çeçen, Atatürk, Çanakkale Onsekiz Mart, Dokuz Eylül, Erzincan Binali Yıldırım, Uludağ, and Van Yüzüncü Yıl Universities in the 2019-2020 academic year. Qualitative data in the study was collected through semi-structured interview forms with 40 students studying at Atatürk University in 2019-2020.

**Table 1:** Information on Candidates for Visual Arts Teachers

| Gender | f | % |
|---|---|---|
| Female | 78 | 55 |
| Male | 64 | 45 |
| **Total** | 142 | 100 |
| **University** | | |
| Ağrı İbrahim Çeçen University | 21 | 15.0 |
| Atatürk University | 39 | 27.4 |
| Çanakkale Onsekiz Mart University | 19 | 13.3 |
| Dokuz Eylül University | 19 | 13.3 |
| Erzincan Binali Yıldırım University | 16 | 11.2 |
| Uludağ University | 12 | 8.5 |
| Van Yüzüncü Yıl University | 16 | 11.3 |
| **Total** | 142 | 100 |
| **Class** | | |
| Class 1 | 12 | 8.4 |
| Class 2 | 21 | 14.8 |
| Class 3 | 57 | 40.2 |
| Class 4 | 52 | 36.6 |
| **Total** | 142 | 100 |

## 2.3 Data Collection Tools

### A. Design Lessons Attitude Scale

Data were obtained by using a Likert type measurement tool called "Design Lessons Attitude Scale" developed by researchers. At the beginning of the scale development studies, first of all, 45 students who were educated in the 3rd and 4th classes in the Department of Painting and Business Education in the fall semester of 2019-2020 asked "What are your thoughts on applying courses about design?" They were asked to write a composition. In addition, by searching the related literature, researchers tried to create a theoretical basis and item pool related to design, and the attitude scale towards the design, the course was arranged as 44 draft items in line with the opinions of the students. The scale was reduced to 39 items on condition that it was suitable for the size that the test intended to measure by taking the opinions of a Turkish language expert, a measurement and evaluation expert and two field experts. The 39-item scale was then applied to 120 students and in the SPSS program, to analyze the construct validity of the scale, factor the analysis was performed using the principal components analysis method, and test-retest and Cronbach Alpha internal consistency coefficients were calculated for reliability. As a result of the factor analysis, the scale consisting of a total of 28 items was

arranged as a 5-point Likert type scale as "I totally agree (5)" ........ "I totally disagree (1)". Cronbach Alpha internal consistency coefficient of the scale was calculated as 0.88 and test-retest reliability as 0.94.

**B. Semi-Structured Interview Form**

Qualitative data in the study were collected through a semi-structured interview form prepared by the researcher and created after the scope validity was reviewed by faculty members. Explanations were made regarding the process of determining the views of the design subjects, what is expected of them, the position of the researcher, the identity of the participants will be kept secret and not used elsewhere. Prospective teachers were asked to report when they were available for the interview. Opinions of prospective teachers were taken with their own permission. During the research process, the participants were asked in which way they would like to be recorded while giving their opinions about the questions. The interviews were recorded in writing as all participants stated that the interviews would express them in written form. The interviews were held face-to-face by the researcher in an environment where pre-service teachers could feel comfortable and express their opinions without hesitation. The interviews with the participants between 20-25 minutes were recorded in writing and the interview was ended by ensuring that the participant was read at the end of the interview period. According to the content analysis, the data obtained in the interview are divided into codes and categories. Reliability = Agreements / (Agreements + Conflict) reliability formula proposed by Miles and Huberman (1994) was used to ensure reliability among coders. According to this formula, coding reliability is calculated as .86.

**2.4 Data Analysis**

In the study, quantitative data obtained with personal information form were presented by taking their frequency and percentages. The data obtained from the scales were analyzed by entering the SPSS 20 program. The frequency distribution and percentages of the quantitative data obtained in accordance with the analysis are presented. Descriptive statistical analyzes were performed in the analysis of the data and the data were determined as a percentage, frequency, mean and standard deviation. One-way analysis of variance was used to test whether there was a significant difference in terms of points between the groups created. Analysis results were tested at $p < 0.05$ significance level. In order to analyze the data found after applying the semi-structured interview form, data analysis is done regularly, and the data provided are coded, the data found are classified into categories and made more meaningful. In this way, it is common to gather and relate data that are in different sections and are semantically related (Yıldırım & Şimşek, 2003). In this study, by applying data coding technique, a considerable convenience was provided in the arrangement of qualitative data and the data were made meaningful.

**Table 2:** Descriptive Statistics on the Attitudes of Visual Art Teachers' Attitudes towards Design Courses Scale

| Expressions | I strongly agree | | Agree | | I agree moderately | | I do not agree | | I strongly disagree | | X̄ | ss |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | f | % | f | % | f | % | f | % | f | % | | |
| 1. I believe that doing design works gives me aesthetic experience. | 40 | 28 | 66 | 47 | 20 | 15 | 9 | 6 | 5 | 4 | 3.87 | 1.11 |
| 2. I believe that the designs we made in the lessons should evoke aesthetic feelings. | 74 | 52 | 54 | 37.8 | 5 | 4 | 6 | 4.2 | 3 | 2 | 3.91 | 1.08 |
| 3. Aesthetic appearance and functionality should be equally important in the design of each product produced in design lessons. | 66 | 47 | 59 | 42 | 11 | 7 | 4 | 2.8 | 2 | 1.2 | 3.88 | .87 |
| 4. I do not think that the design production process affects my aesthetic feelings. | 3 | 2 | 4 | 2.8 | 12 | 8.2 | 79 | 56 | 44 | 31 | 1.74 | 1.02 |
| 5. I think that the design studies prepared with the computer mostly do not give the desired plastic values. | 4 | 2.8 | 7 | 5 | 11 | 7 | 69 | 49 | 51 | 36 | 1.83 | 1.74 |
| 6. I think that applied works involving design helped me to produce new things. | 48 | 34 | 83 | 58.8 | 9 | 6 | 2 | 1,2 | - | - | 3.95 | 1.12 |
| 7. I believe that I can produce original works in courses containing design applications. | 41 | 28 | 78 | 56 | 19 | 13.2 | 4 | 2.8 | - | - | 3.82 | 1.83 |
| 8. It makes me happy to come up with different studies in lessons about design. | 47 | 33 | 61 | 43 | 15 | 11 | 16 | 11 | 3 | 2 | 3.71 | 1.30 |
| 9. I think technology-based design applications will benefit creativity from different perspectives. | 43 | 30.8 | 80 | 56 | 13 | 9 | 6 | 4.2 | - | - | 3.90 | 1.33 |
| 10. I think that designing will contribute positively to the development of my creative and different thinking skills. | 60 | 42 | 56 | 39 | 15 | 11 | 6 | 4.2 | 5 | 4 | 3.72 | 1.07 |
| 11. The concept of design evokes the innovative concept for me. | 70 | 49 | 58 | 41 | 7 | 5 | 7 | 5 | - | - | 3.95 | 1.52 |
| 12. I think that the skills I have gained in applied lessons with design will positively affect my future professional life. | 50 | 35 | 72 | 51 | 5 | 4 | 10 | 8 | 5 | 4 | 3.88 | 1.21 |
| 13. I do not feel enough to be able to design. | - | - | 6 | 4 | 7 | 5 | 88 | 63 | 41 | 28 | 1.90 | 1.02 |
| 14. I believe that doing applied works involving design increases my self-confidence. | 39 | 28 | 74 | 52 | 12 | 8 | 9 | 6 | 8 | 6 | 3.89 | 1.17 |
| 15. I think that I can apply the experiences I gained in these lessons in my daily life. | 5 | 4 | 20 | 15 | 25 | 18 | 46 | 31 | 47 | 32 | 1.73 | 1.20 |
| 16. I think that I am more active in design intensive applied courses. | 39 | 28 | 79 | 54 | 9 | 6 | 10 | 8 | 5 | 4 | 3.85 | 1.18 |
| 17. I can easily apply design principles and elements in design applications lessons. | 11 | 7 | 22 | 15 | 19 | 14 | 57 | 41 | 33 | 23 | 1.79 | 1.24 |
| 18. I don't like to design. | 3 | 2 | 4 | 3 | 20 | 14.2 | 86 | 59.8 | 29 | 21 | 1.81 | .79 |
| 19. I believe that designing increases my motivation for other lessons. | 9 | 6 | 12 | 8 | 19 | 14 | 70 | 49 | 33 | 23 | 1.11 | 1.24 |
| 20. I believe that doing design works improves my problem solving skills. | 40 | 28 | 66 | 46.8 | 20 | 14.2 | 11 | 7 | 5 | 4 | 3.92 | 1.09 |
| 21. I think it is necessary to do team work during the works that involve design. | 45 | 32 | 71 | 50 | 10 | 7 | 9 | 6 | 7 | 5 | 3.39 | 1.41 |
| 22. The concept of design is not important to me. | 5 | 4 | 8 | 6 | 13 | 9 | 77 | 54 | 39 | 27 | 1.05 | 1.19 |
| 23. I think that the workshops where the design lessons are given have sufficient physical infrastructure. | - | - | 5 | 4 | 5 | 4 | 88 | 61 | 44 | 31 | 1.98 | 1.47 |
| 24. I look forward to the time I will attend classes about design. | 40 | 28 | 74 | 52 | 20 | 14 | 5 | 4 | 3 | 2 | 3.74 | 1.16 |
| 25. I think that the lecturers who give lessons about design have sufficient design knowledge. | 6 | 4.2 | 20 | 14 | 12 | 8.4 | 80 | 56.4 | 24 | 17 | 1.02 | 1.14 |
| 26. I think artistic talent is needed to design. | - | - | 5 | 4 | 10 | 7 | 74 | 52 | 53 | 37 | 1.17 | .88 |
| 27. I find the duration of the courses about design sufficient. | - | - | 4 | 2.8 | 5 | 4 | 40 | 28 | 93 | 65.2 | 1.01 | 1.11 |
| 28. I believe that using technology in the course of design applications will help in the processing of the course. | 60 | 42 | 62 | 43.8 | 12 | 8 | 8 | 5 | 2 | 1.2 | 3.47 | 1.58 |

## 3. Findings

Descriptive statistics regarding the attitudes of visual arts teacher candidates towards design courses are given in Table 2.

### 3.1. Findings Related to the First Sub-Problem

When Table 2 is examined, it is believed that teacher candidates' design studies give them an aesthetic experience ($X$ = 3.87), they believe that the designs they make in design lessons should evoke aesthetic feelings ($X$ = 3.91), they think that the functionality of the studies conducted in design lessons should be taken into consideration as well as their aesthetic appearance ($X$ = 3.88), they think that applied works involving design enable them to produce new things ($X$ = 3.95), and they produce different works. They expressed that they were happy ($X$ = 3.71). In addition, they think that technology-supported design applications will benefit creativity from different perspectives ($X$ = 3.90), that the concept of the design evokes the innovative concept for them ($X$ = 3.95) and they think that the skills they acquire in these courses will positively affect their future professional lives, ($X$ = 3.88), They stated that their self-confidence increased in their classes ($X$ = 3.88) and they felt more active ($X$ = 3.85). The other items that they gave positive opinions were found that the teacher candidates stated that the design lessons improved my problem-solving skills ($X$ = 3.92) and that they think it was necessary to do teamwork ($X$ = 3.39). There are also a number of negative opinions against the positive opinions of the preservice teachers regarding the design courses. When these opinions are examined, the following conclusions were reached: they did not think that the experiences they gained in these lessons could apply in their daily lives ($X$ = 1.73), that they could not easily apply the design principles and elements in the design practice lessons ($X$ = 1.79), also they stated that they do not believe that design increases my motivation for other courses ($X$ = 1.11), that the workshops where the design courses are taught do not have sufficient physical infrastructure ($X$ = 1.98) and they think that the lecturers teaching the design do not have sufficient design knowledge ($X$ = 1.79). . In addition, they do not find the duration of design courses sufficient. ($X$ = 1.01) stated.

### 3.2. Findings Related to the Second Sub-Problem

The results of one-way analysis of variance for teacher candidates' attitude scores regarding design classes according to their grade levels are shown in Table 3.

**Table 3:** Results of one-way analysis of variance of pre-service
teachers' attitude scores regarding design lessons by grade levels

| Variance Source | Total of Squares | Sd | Average of Squares | F | p |
|---|---|---|---|---|---|
| Between Groups | 68.152 | 3 | 31.356 | 1.38 | 0.26 |
| In-groups | 7014.115 | 138 | 21.235 | | |
| Total | 7035.256 | 141 | | | |

When Table 3 is analyzed, according to the results of one-way analysis of variance, it is seen that there is no statistically significant difference between the groups in terms of attitude score averages of students according to their class levels [F = 1.38, p> .05].

### 3.3. Findings Related to the Third Sub-Problem

Content analysis resulted in five categories. These; affective dimension, positive aspects, negative aspects, attitude towards the lesson, benefiting from technology. Table 4 and subsequent explanations relate to how the teacher candidates feel during the application of design lessons.

**Table 4:** Teacher Candidates' Emotions About Design Courses

| Category | f | Codes |
|---|---|---|
| **A1** **Affective dimension** | 15 | Development of aesthetic feelings ($S_3,S_5,S_6,S_7,S_{10},S_{11},S_{18},S_{19},S_{20},S_{21},S_{25},S_{26},S_{27},S_{30},S_{37}$) |
| | 14 | Emotional satisfaction ($S_4,S_8,S_{12},S_{14},S_{15},S_{17},S_{21},S_{23},S_{24},S_{27},S_{28},S_{32},S_{38},S_{39},S_{40}$) |
| | 13 | Happiness, delightful ($S_1,S_2,S_9,S_{10},S_{12},S_{13},S_{14},S_{16},S_{20},S_{22},S_{23},S_{29},S_{38}$) |
| | 9 | Exciting ($S_4,S_8,S_{17},S_{20},S_{24},S_{28},S_{33},S_{34},S_{39}$) |
| | 7 | Interest ($S_4,S_9,S_{22},S_{28},S_{32},S_{33},S_{35}$) |
| | 2 | Dislike ($S_{31},S_{36}$) |

Table 4 shows that pre-service teachers' opinions about their feelings towards design lessons are very similar. It can be said that the views improve aesthetic feelings and focus on original thinking, excitement, and happiness. While student $S_3$ stated that design improves aesthetic feelings in himself, student $S_1$ stated that design is a great feeling and makes him very happy. The student stated that his studies in design courses in $S_9$ satisfy him because he gained skills for the teaching profession. Some of the one-to-one quotations of teacher candidates regarding this situation are given below:

> *"I like the designs we made in the lessons. This situation increases my interest in the course and leads me to research what I can do differently. Combining the functionality required by different thinking and design makes this course very interesting for me."* ($S_4$)

> *"I think that the techniques we use in the studies we do in design courses shape our aesthetic perceptions. I think that aesthetic perceptions are at the forefront especially in the search for shape, form, and color in the design process."* ($S_{11}$)

> *"When I make a design that I think is successful in the lessons, it gives me professional satisfaction to see that I can do something besides emotional self-confidence. But I also know that I should not be content with it."* ($S_{17}$)

> *"It seems interesting to me that designing requires the necessity of constantly searching for something different."* ($S_{33}$)

In Table 5, the codes related to the positive opinions of the preservice teachers' design courses are given.

**Table 5:** Prospective Teachers' Positive Views on Design Courses

| Category | f | Codes |
|---|---|---|
| **A2** **Positive Aspects** | 20 | Original and creative thinking ($S_1,S_2,S_6,S_8,S_9,S_{11},S_{12},S_{14},S_{15},S_{20},S_{22},S_{23},S_{27},S_{33},S_{34},S_{35},S_{37}, S_{38},S_{39},S_{40}$) |
| | 17 | Professional experience ($S_3,S_4,S_5,S_{10},S_{12},S_{13},S_{15},S_{17},S_{18},S_{19},S_{20},S_{21},S_{22},S_{23},S_{29},S_{38},S_{39}$) |
| | 9 | Self-confidence ($S_2,S_4,S_6,S_7,S_9,S_{10},S_{12},S_{13},S_{28}$) |
| | 8 | Increasing interest and motivation for the cooperation ($S_5,S_8,S_{15},S_{22},S_{24},S_{32},S_{34},S_{40}$) |
| | 6 | Gaining consciousness of responsibility ($S_7,S_8,S_{11},S_{26},S_{28},S_{36}$) |
| | 4 | Recognizing group friends ($S_3,S_9,S_{25},S_{38}$) |

When Table 5 is examined, it is seen that they express different opinions about the positive aspects of the design courses. According to the student $S_6$, they stated that they should be different and original in their design studies and this led to the development of their original and creative thinking skills by directing their perceptions, while the student stated that they had the chance to experience various situations that they could use in their future lives according to $S_{13}$. Students $S_6$ and $S_{13}$ expressed this situation as follows;

> *"While we are working on the design principles and elements that we have theoretically processed, we have constantly researched because we know that it should be different and original from the previous studies. I think this situation caused our emerging works to be shaped with more creative thinking."* ($S_6$)

As Erinç (2005) stated originality is creativity. And this originality is not just formed but its integral element is essence, content. Making this essence and form meaningful in design requires an intellectual dimension. For creativity, there is a need to establish a conceptual link between material, fiction, function, and aesthetics. In order to put the brain in the field of aesthetics and creativity and to train in this sense, there is a need to run many processes together. In this sense, the necessity of theoretical courses is indisputably important. Topics covered in important infrastructure courses such as Art History, Art Education Theories and Aesthetics should be kept on the agenda in applied workshop lessons.

> *"The design process requires an effort to present theoretical issues such as design principles and elements with different issues such as originality, creativity, and functionality and present them in an aesthetic way. For this reason, we use all our knowledge and skills*

*together in design lessons. I think this situation provides a suitable environment for us to prepare for the teaching profession that we want to do in the future."* (S13)

Student stated that design lessons in S28 caused the pre-service teachers to increase their trust in them. The student S28 regarding this situation stated that;

*"My self-confidence increases as my studies and lecturers appreciate the work, I do in design classes. This causes me to work even more on the design assignment given next. For this reason, I think the design lessons are positive."* (S28)

As Alp (2009) stated it should be realized that knowledge and technique are not necessary but sufficient in every stage of the design and that they are in the field of aesthetics and art. Therefore, having an interdisciplinary structure in which these elements are together required that prospective teachers work in cooperation. It was seen that teacher candidates emphasized the importance of collaboration during the S34 design studies. S34's statements are as follows;

*"While we need to be unique for a few different but intertwined areas, we also need to make design studies that we need to think creatively and aesthetically, such as making functional designs. In this process, I think it is very advantageous to study a topic in groups. My group friend may think that I can not think and can complete my deficiency. In addition, the division of issues facilitates our work by cooperating within the group regarding the processes of the design."* (S34)

In Table 6, opinions of pre-service teachers about the negativities they encounter in design, courses are given.

**Table 6:** Pre-service Teachers' Opinions
on the Negativity They Encounter in the Design Lessons

| Category | f | Codes |
|---|---|---|
| **A3**<br>**Negative Aspects** | 18 | Insufficient class hours<br>(S1,S2,S4,S8,S12,S14,S15,S17,S20,S22,S23,S24,S27,S28,S32,S38,S39,S40) |
| | 15 | I did not encounter negativity<br>(S3,S5,S6,S7,S10,S11,S18,S19,S20,S21,S25,S26,S27,S30,S37) |
| | 13 | Insufficient physical structure of class<br>(S1,S2,S9,S10,S12,S13,S14,S16,S20,S22,S23,S29,S38) |
| | 9 | Inadequacy of teaching staff<br>(S4,S8,S17,S20,S24,S28,S33,S34,S39) |
| | 2 | Lack of motivation<br>(S31,S35) |

According to Table 6, it is seen that S3 and S5 students have similar opinions about the fact that they did not encounter any negativity in the design courses, while S2, S4, S17 and S22 students have different views. Student S2 stated that inadequate physical

infrastructure of the classes is a negative situation faced by the lesson. The teacher candidates $S_{17}$, $S_{20}$, $S_{24}$ stated that they considered the instructors giving design lessons insufficient, and this was the most important negativity they encountered in the course.

On the other hand, teacher candidate $S_{31}$ stated that design lessons are not boring and difficult to motivate them sufficiently. According to the statements of the students, one-to-one quotations are as follows:

> *"I believe that the types and hours of design courses should be increased. Since the course hours are insufficient for the implementation phase of the subjects we have acquired in the current courses, we have to complete our studies outside the classroom. As such, we stay away from the motivation of the classroom environment."* ($S_1$)

> *"Some of the tools we could use while designing in the classroom were insufficient. The absence of a computer-assisted laboratory in our department is the biggest negativity for us in this process. Although we live in the information and technology era, I think that it is a big deficiency for us to not use technology adequately."* ($S_{10}$)

The introduction of new technologies and materials that are rapidly developing in applied arts, introducing these materials to students who will become an art educators with experimental lessons are of great value in terms of discovering the unity between function, material, and aesthetics. For this reason, the inadequacies of the pre-service teachers in the physical infrastructure of the classes will cause great problems in teacher education. The ethic (1995) stated that the availability of the building, the provision of tools, equipment, technical and technological facilities are among the factors that positively affect artistic creation. Similarly, in Dolunay (2016), he stated that computer aided art education significantly increases students' sense of creativity.

> *"I think that the instructor who gave the lesson did not have sufficient design knowledge. He constantly gives the subject in the lessons. It does not inform us about what to do and how. I think that he did not make a just evaluation during the evaluation process."* ($S_{28}$)

> *"I can't be motivated because I don't like design classes. Class hours are quite boring and difficult for me and it is endless."* ($S_{31}$)

In Table 7, opinions about the importance of design lessons in teacher education are given.

**Table 7:** Views on the Importance of Design Courses in Teacher Education

| Category | f | Codes |
|---|---|---|
| **A4**<br>**İmportant** | 38 | It's very important<br>($S_1,S_2,S_3,S_4,S_5,S_6,S_7,S_8,S_9,S_{10},S_{11},S_{12},S_{13},S_{14},S_{15},$<br>$S_{16},S_{17},S_{18}S_{19},S_{20},S_{21},S_{22},S_{23},S_{24},S_{25},S_{26},S_{27},S_{28},S_{29},S_{30},S_{32},S_{33},\ S_{34},S_{36},\ S_{37},S_{38},S_{39},\ S_{40}$) |
| | 19 | Improving professional skills<br>($S_1,S_2,S_4,S_5,S_7,S_8,S_9,S_{12},S_{14},S_{15},S_{17},S_{21},S_{23},S_{24},\ S_{28},S_{32},S_{38},S_{39},S_{40}$) |
| | 10 | Cooperative learning<br>($S_2,S_5,S_6,S_7,S_{10},S_{18},S_{19},S_{27},S_{30},S_{37}$) |
| | 7 | Taking responsibility<br>($S_3,S_5,S_{10},S_{12},S_{21},S_{27},S_{30}$) |
| | 2 | Active learning<br>($S_3,S_5$) |

According to Table 7, the majority of the teachers think that design lessons are important for teacher education, except for two. While examining the important aspects, he emphasized the importance of the design lesson by stating that $S_2$ from the teacher, candidates are important because it develops professional skills and develops $S_{21}$ cooperative learning skills, $S_{27}$ develops a sense of responsibility and is active in learning in $S_3$. As for the opinions of the preservice teachers, they stated:

> *"Design lessons are important for training teachers. Sometimes we do not know how to apply the information we receive theoretically. I think we gain experience by seeing how to apply it in design lessons. It makes me very interesting to design using different materials. When I become a teacher, I can easily teach the topics I learned in these lessons. I think these topics will contribute positively to the emotional and mental development of students. Most importantly, I would like to teach them to use different and unique thinking skills that we practice a lot in these lessons."* ($S_2$)

It can be accomplished with a design made with an original perspective of an aesthetic design (Gallace and Spence, 2014). When considered within this framework, material, function, design, aesthetics and time dimension should be handled together in design lessons. As a result, the student, who falls into the field of aesthetics theoretically and practically, will adapt the fiction that begins in his brain to the material and will be able to create new, contemporary, time and environmentally sensitive aesthetic creations with the technical and functional dimensions of the design. Therefore, it can be argued that design lessons that can provide these aesthetic development processes to the individual is important and necessary in teacher education.

> *"I think it is a very efficient practice to study the topics requested from us in design lessons in groups and to realize the designs in cooperation. Thus, we complement each other with our other group friends. We help each other where we are missing. I will bring this working habit that I have acquired in design classes to my students when I become a teacher in the future."* ($S_5$)

*"I think these lessons are absolutely important in training teachers. I believe that being able to do experimental works without fear of creative thinking, which is necessary for us to design, has brought me a great awareness in terms of discovering the unity between material and aesthetics."* (S39)

Experimental studies stated by S39 are actually trials. Experiments improve the evaluation power in the design process. Evaluation is the way the goals are determined. It is also a creative action. The experiment is also an interpretation. Gökaydın (1994) stated that there is an organic connection between interpretation and creativity, and the student who deals with meaningful comments, experiments and evaluations will also gain awareness of the structure in this environment.

*"In teacher education, one hundred percent is necessary for me. They should take this course in teachers from different branches such as science and mathematics."* (S40)

The fact that the National Science Foundation (NSF) in the USA publishes a report showing that applied creative approaches to science education by using most of the methods used in creative arts is in line with the pre-service teachers' views (Hetland, Winner, Veenema, and Sheridan, 2007).

In Table 8, the opinions about using technology in design courses are given by coding.

**Table 8:** Opinions About Using Technology in Design Courses

| Category | f | Codes |
|---|---|---|
| **A5 Necessary** | 33 | It's very necessary (S2,S3,S4,S5,S6,S7,S8,S9,S11,S12,S13,S14,S15, S16,S17,S18,S19,S20,S21,S22,S23,S24,S25,S26,S27,S28,S29,S30, S34,S36, S37,S38,S39) |
| | 11 | Improving professional skills (S3,S5,S10,S11,S12,S18,S20,S22,S25,S26,S28) |
| | 10 | Developing creativity (S1,S3,S6,S8,S10,S15,S18,S19,S20,S25) |
| | 8 | Developing original thinking (S7,S10,S11,S18,S20,S25,S26,S37) |
| | 6 | Facilitating technical application (S6,S10,S19,S20,S26,S37) |

According to Table 8, it was determined that the majority of prospective teachers believe that it is necessary to use technology in design courses. The teacher candidates stated that S3 is necessary for the development of their professional skills and that S6 technology provides great convenience in using time and reaching different examples, and this improves the creativity of this situation. He stated that he used technology to reach other case studies in S18 in a similar way, which helped him to do original works. He stated that the designs he made on the computer in S10 made it very easy to use the technique,

therefore, technology was necessary. When the opinions of teacher candidates related to this were examined, it was determined that they stated:

*"I consider using technology as a necessity beyond design in design lessons. Because while realizing a design, it is necessary to seek answers to questions such as what is going on in the world and what others have done. This situation causes not only making the same designs but also different ideas in our minds during the design process."* (S8)

It is inevitable to use technology, which is an integral part of every field, in design education. The acquisition of technology to the individual who makes artistic designs, the ability to do a lot of work in a short time and to create original designs and compositions, and as a result of this, the artist is directed towards collaborative and collective work from individuality (Bequette, & Bequette, 2012; Delacruz, 2004).

*"Thanks to technology, I can gather a lot of visual information about my design work and take advantage of them. In this way, I can do more original works. Especially the internet is very useful in this sense."* (S18)

The most important thing to consider when using technologies in design education is to analyze and question the extent to which they will benefit from technology while creating their works. Because original and original works will be replaced by imitation works. Therefore, there are great duties for educators.

*"I use computers in almost every process, starting with my drafts while designing. Thus, I finish my designs more easily without wasting time with paper and pencil."* (S26)

Introducing and using experimental lessons to students who will become art educators of new technologies and materials that are rapidly developing in design education is of great value in terms of discovering the unity between function, material, and aesthetics. Of course, it is not the right approach to completely remove students from three-dimensional studies and prevent them from exploring different materials and their possibilities. Practices that direct the substance to its processing sensitivity and enable them to experience items such as substance, form and content will greatly benefit students. Technology should be used in a position that supports this process. Similar results were obtained in the study of Yılmaz, Üredi, and Akbaşlı (2015), where prospective teachers perceive their perception of technology use in education, and their perceptions of trainees' use of technology are sufficient. One of the variables necessary for prospective teachers to develop a positive attitude towards the teaching profession is the level of computer use and skill (Usta & Korkmaz, 2010). Therefore, it is seen as a positive result that pre-service teachers who use technology, especially computers, in design education, require a high rate.

## 4. Results and Discussion

In this research, which was designed with a sequential exploratory research strategy, which is one of the mixed research methods, and the attitudes and opinions of the visual arts teacher candidates regarding the design courses were examined, the following results were reached:

### A. Results for the first sub-problem

When the visual arts teacher candidates gave the scale items prepared in order to determine their opinions about the design lessons, it was observed that the pre-service teachers' design studies believed that they had an aesthetic experience ($X = 3.87$) and that the designs they made in the design courses should evoke aesthetic feelings ($X = 3.91$). They stated that they thought that the functionality, as well as the aesthetic appearance, should be considered ($X = 3.88$). With reference to the literature review, the results of this study also support the studies (Davis et al., 1989; Venkantesh, 2000) which stated that there is a correlation between aesthetics and creativity to use. In literature, there are various goal definitions for basic design education. Atalayer (1994) states that the phenomenon of noticing, sensing, and discovering in an the aesthetic object will be acquired with intense experience, that richness of experience means equivalent to artistic creativity, and that life itself is a flowing experience and intelligence add width and depth to the experience, and experiences are critical in intelligence. He also explained that he developed and the language of artistic expression will be gained through experience. Therefore, it is very important for the preservice teachers to state that the design lessons give them an aesthetic experience. In addition, they stated that applied works involving design enable them to produce new things ($X = 3.95$), they think that they can produce original works ($X = 3.82$), and it makes them happy to produce different works ($X = 3.71$). In addition, they think that technology-supported design applications will benefit creativity from different perspectives ($X = 3.90$), that the concept of the design evokes the innovative the concept for them ($X = 3.95$) and they think that the skills they acquired in these courses will positively affect their future professional lives, ($X = 3.88$). They also stated that self-confidence increased ($X = 3.88$) and they felt more active ($X = 3.85$). The other items that they gave positive opinions were found that the teacher candidates stated that the design lessons improved my problem-solving skills ($X = 3.92$) and that they think it was necessary to do teamwork ($X = 3.39$). Çetinkaya's research also supports these results. As Çetinkaya (2011) said students are managing a variety of exercises. Given projects and design problems proceed cumulatively therefore, students are expected to use their experiences that they gained in previous exercises. Within this knowledge, students have the tendency to be more practical to the framework of problem-solving. It is also expected from them to be enhanced in visual thinking, memory, and understanding of their environment. In order to do that, they have to able to use different techniques of drawing and presentation. They have to be efficient at three-dimensional thinking as much as two-dimensional thinking and perception (Çetinkaya, 2011). These

defined goals of basic design education are listed under the following categories: the development of creativity and problem-solving ability, the development of visual perception, and the development of design language (Beşgen et al., 2015; Kuloğlu & Asasoğlu, 2010; Makaklı & Özker, 2015; Salama&Wilkinson 2007). There are also a number of negative opinions against the positive opinions of the preservice teachers regarding the design courses. When these opinions are examined, the following conclusions were reached: they did not think that the experiences they gained in these lessons could apply in their daily lives ($X$ = 1.73), that they could not apply the design principles and elements easily in design practice lessons ($X$ = 1.79), they did not believe that design increased my motivation to other lessons ($X$ = 1.11), They stated that the workshops where the design lessons were taught did not have sufficient physical infrastructure ($X$ = 1.98) and they thought that the lecturers who gave design-related courses did not have sufficient design knowledge ($X$ = 1.79). In addition, they do not find the duration of design courses sufficient. ($X$ = 1.01) stated.

## B. Results for the Second Sub-problem

When Table 3 is analyzed, according to the results of one-way analysis of variance, it is seen that there is no statistically significant difference between the groups in terms of attitude score averages of students according to their class levels [F = 1.38, p> .05]. In similar studies, it was found that there was no difference between classes close to each other (Berkant, 2013; Yılmaz and all, 2015). This situation is thought to be due to the fact that the computer knowledge of the students is gained in the home or previous education (secondary and high school) environments.

## C. Results for the Third Sub-Problem

Content analysis resulted in five categories. These; affective dimension, positive aspects, negative aspects, attitude towards the lesson, utilization of technology. When the opinions of pre-service teachers about their feelings towards design lessons are examined, it can be said that their aesthetic feelings are developed and they focus on original thinking, excitement and happiness. When the positive opinions about the design lessons are examined, they stated that they should be different and original in their design studies and this leads to the development of original and creative thinking skills by directing the perceptions of teacher candidates, they have the chance to experience various situations that they can use in their future lives and increase their confidence. Regarding the negativities, they encountered in the design lessons, pre-service teachers stated that the physical infrastructure of the classes were insufficient, they considered the instructors who gave the design lessons insufficient and that the lessons were not motivating them enough, they were boring and difficult. Kavuran (2007) pointed out that the basic design the lesson needs a more qualified education and stated that it is necessary to act from the living space in order to create permanent track behavior in students. Therefore, eliminating these deficiencies is of great importance for the course to be processed in line with the objectives set and to achieve the desired results. In

addition, some research results that are encountered in the literature researches related to insufficient class hours support this finding (Ermiş, 2019). In addition, the majority of prospective teachers think that design lessons are important for teacher education. While examining the important aspects, prospective teachers mentioned the importance of the design course by stating that they develop professional skills, develop cooperative learning skills, develop a sense of taking responsibility and are active in terms of learning. In addition, it was determined that a great majority of prospective teachers believe that it is necessary to use technology in design courses. The reason for this is that teacher candidates develop their professional skills, think that technology provides great convenience in using time and reaching different examples and thinks that it improves creativity. Considering the 21st century technological developments in Sarı (1997), he stated that educators should be individuals who use the possibilities of technology at the highest level, who use their creative knowledge, have their own characteristics, and who have a high level of design power and creativity. In Black and Browning (2015), they stated that technology increased creativity as a result of their research and stated that providing technology-supported art education can provide 21st-century education. It is seen that quantitative and qualitative data support each other.

## 5. Recommendations

In the light of the findings obtained in the research, in order to overcome the problems in design education, design education institutions should direct students to think critically, establish a cause-effect relationship, research, raise their awareness, comment, and discuss. In this process, information transfers should be applied controversially, free from ready-made information transfer and free from memorizing approaches. The effort to raise individuals who are open to differences and possibilities have high levels of analysis and synthesis, and intuitive and affective power will support the increase in students' aesthetic values and perception levels. In order for creative ideas and creative designs to be realized, it is necessary to increase the skills of students by going beyond the usual perception and learning methods. For this reason, faculties of education have to enrich, flex and personalize their programs in an interdisciplinary way.

## 6. Conclusion

According to the data obtained as a result of the practice, they stated that the practices that the pre-service teachers made in the design courses enable them to think more creatively and differently, that these courses highlight the concepts of innovation, original and aesthetics for them, and also increase their problem-solving skills as well as design. It is observed that there is no statistically significant difference between the groups in terms of the average of attitude points of the designated teachers according to their class levels. When the opinions of pre-service teachers about their feelings towards design lessons are examined, it can be said that their aesthetic feelings are developed and

they focus on original thinking, excitement and happiness. In addition regarding the negativities they encountered in design lessons, pre-service teachers stated that the physical infrastructure of the classes was insufficient and they found the teaching staff giving the design lessons insufficient.

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