The Place and Effects of Technology in the Visual Arts Course

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Abstract: Individuals' levels of access to contemporary education affect the development level of the societies they live in. Changes and developments in the field of education are important in this sense. Technological advancements experienced in the general field of education have also affected visual arts education, and different points of view have emerged in this field. In this study, it is aimed to determine the interaction of art education in parallel to the dynamism of the age with technology according to the opinions of visual arts course teachers. For this purpose, the study uses the qualitative research method of case study. The participants of the study consist of a total of 8 visual arts teachers including 5 female and 3 teachers actively working at secondary schools in the academic year of 2019-2020. Observation and semi-structured interview forms are used in the data collection process. By analyzing the obtained findings with the thematic analysis method, the findings are collected under the themes of reflections and usage methods. In line with the results of the study obtained from the data, positive and negative results of using technology as a material in art education are reached. As in all areas of education, the use of technology in the visual arts course is important for its positive effects such as providing ease of learning for the student. While the study has been completed before the COVID-19 pandemic period, the compulsory nature of technology use today has increased the significance of the study.

Keywords: *Education material, qualitative research, secondary school, instruction methods.*

To cite this article: Tetikci, I., Erim, G., & Bozlak Halaclar, B. (2021). The place and effects of technology in the visual arts course. *European Journal of Educational Research, 10*(3), 1089-1100. https://doi.org/10.12973/eu-jer.10.3.1089

Introduction

Rapid developments in the field of information and technology have taken hold of social systems, and these are important in terms of change and development in the field of education. In addition to the easiness of accessing information, technology also provides effective usage opportunities in terms of materials as a learning and instruction approach. Living conditions that have developed by changing with technology have taken art under their effect, and with the use of new materials, tools and equipment, different techniques and styles have started to appear (Bulut, 2014).

New movements such as Pop Art, Action Painting, Kinetic Art, Op Art and Happening that we heard about in the 20th century have rapidly taken their place among other art movements in art history. It is striking that digital materials are active in all these disciplines where technological devices are needed. The proximity of the aforementioned movements to technology has contributed to the formation of the art of today and paved the way for revelation of current art concepts. While developments in art history are affecting the artist in the intellectual sense, the necessity to examine different points of view in arts education has emerged (Bulut, 2014). Among different points of view, we may list the "Multi-Field Visual Arts Education Method (MFVAEM)", which we heard after the copy method, naturalist method, child- and curriculum-centered methods and became effective in 1990s and 2000s, and the "Visual Culture Theory and Education Method", which acts with visual arts-based understanding and philosophy which we know began to be effective in arts and design education in the first quarter of the 21st century (Ozsoy, 2015). Alongside the aforementioned points of view, according to Thomas (2004, as cited in Aydin, 2019), with popular culture's support in the education of children, children may be allowed to integrate information into their lives easier. As a consequence of this situation, it may be stated that changes have occurred in the objectives and methods of arts education. The follow-up and implementation of these changes have become possible today with informatics technology.

A reflection of the rapid development of informatics technologies shows itself as the transfer of instruction materials into the computer environment. Additionally, with the mediation of the internet, the dimensions of these reflections are

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constantly gaining significance. The primary goal of instruction materials may be stated as providing students with the opportunity to best utilize their educational potential. While firstly supporting the formation of this educational potential, education and instruction materials provide significant contributions for realization of effective learning (Seferoglu, 2006). In addition to those that we know to be actively used in education environments, it is known that smart boards (interactive boards), computers, tablets, cameras, auditory tools, smartphone and internet use, e-books, e-magazines, short films, video lectures and virtual museum visits are taking their place among instruction materials fast. Carrying these instruction materials that are used in the general field of education into the field of arts education will undeniably contribute to the individual receiving a complete arts education (Ozsoy, 2015). For a multi-purpose arts education program, in addition to applications, it is needed to derive attention to art history and the works of artists. In this sense, visual arts teachers should present their students with examples from films, slides, implementation videos, reference books and arts education magazines.

Arts education as a whole is a branch of education that depends on application and tools-equipment use. As in realization of art, application is also an indispensable aspect in arts education. In this sense, application becomes an educational tool. There is a need to apply art and reveal a product for all ages and educational levels. The more different application examples are utilized in arts, the more this field becomes enriched and allows grounds for production of new ideas (Ayaydın & Mercin, 2013). Today, there are tools-equipment that have highly different opportunities which are presented to the artist as the raw material. It is possible to use, try and analyze these in almost all topics of arts education (Isingor, 1989, as cited in Tan, 2009). It is needed to learn many pieces of information from the preference of these to their forms of usage, and to the formation of a work within the process. This is why which tools-equipment are preferred and how they are used are important issues at the application stage of arts education.

Within arts education courses that cover applied and theoretical information together, the contribution of the selected materials, tools-equipment and the instruction method to education cannot be denied. "An instruction method is a general name for the ways that are followed to provide the student with behaviors pointed out by goals in the most effective way" (Ozturk, 2007, as cited in Karagoz & Karagoz, 2017, p.53). In order to transfer information to the student in a suitable way to the pace of the era, it is important to use technological education materials in educational settings. San (1990) advocated the necessity of using technology in fine arts education for contemporary education. This study is significant in terms of emphasizing how arts education utilizes technology in parallel with the dynamism of the era and the effects of technology in this context. Examples of previous studies on the concept of technology in visual arts education are reviewed below.

In the study by Hicyilmaz and Karahan (2016) named the Views of Teachers and Prospective Teachers of Visual Arts on Instruction Technologies, the views of teachers and prospective teachers of visual arts on concepts defined in relation to technology and education, what they knew and equipment they could use were collected. It was concluded that the most broadly known and prevalently used instruction technologies among the visual arts teachers were computers and smart boards. It was also observed that the prospective teachers knew and used instruction technologies like projection and computers more. In addition to this, the effects of technological tools and equipment on the instruction process and technology usage capacities were also measured, but it was observed that the prospective teachers stated very few opinions on these topics. In this context, it was concluded that teachers are not sufficiently equipped.

Among other articles in the field, Degerli and Turker (2016) investigated the technology awareness of students at the branch of arts teaching at the department of fine arts at a school of education in the arts education process, how they perceived this process and whether or not they used existing technologies in the arts education process. Most of the survey participants stated that they followed technological discoveries and developments in their field, technology contributed to their artistic activities, artistic movements have followed technological developments throughout history, technology today directs artistic production, and technology use directs arts education processes in the positive direction. In their study, the importance of field teachers and instructor academicians to improve themselves and update the education provided to them was emphasized.

In their article titled "Opportunities of Utilizing Computer Technology in Visual Arts Education", Bora (2018) described what these computer technologies, programs and computer-assisted equipment that are used in various fields of virtual arts are, as well as how they could be utilized in different fields, with the main points of the topic. Bora emphasized that, in the field of visual arts education, computer technologies that need to be used, two- and three-dimensional design, replication, copying and printing tools constituted the foundation of their study.

In addition to these, by starting with the concept of technology, Stankiewicz (2004) elaborated on each of their views on visual literacy and made recommendations for the arts education of today. Stankiewicz, who emphasized that technology and art have a special relationship, focused on the idea that, rather than being merely about application, new technologies may serve as a language in the form of replicating and presenting resources that will support the learning processes of students. In their article titled "Learning in 21st Century, Interactive Multimedia Technology", Bork (1992) explained the characteristics of interactively used nowel instruction systems. In their study, they defended the idea that a single learning strategy in the process of providing the individual with a piece of information would not

be sufficient, but it would be useful to present various learning strategies to the individual and allow them to use the strategy they need. They stated that multimedia technologies may be used in this process.

In the study by Barr (1990) titled "a Solution in Search of a Problem: The Role of Technology in Educational Reform", the author mentioned five goals that are needed for a meaningful education reform. These goals were listed as making learning more independent, more customized, more interactive, more interdisciplinary and more intuitive. They stated that there are technological tools that may help overcome some obstacles to reaching these goals, and independent learning may be developed by using various electronic database forms and through automated data collection and processing instruments. In this sense, they emphasized that customized learning may be supportable by computer-assisted instruction software, as well as specialized databases like cyber texts and cyber environments. They mentioned that interactive learning may be facilitated by using video projection systems, intelligent educators, interactive video systems and telecommunication networks. In terms of interdisciplinary learning, they recommended that this learning be supported with general software tools like electronic tables, database management systems and word processors, in addition to simulation and modelling software. Finally, in their study, they advocated for the idea that intuitive learning may be supported by using various visualization programs such as graphical calculators, graphics software and three-dimensional modelling programs.

In the article by Wilks et al. (2012), technologies and tools included in visual arts courses, as well as the usage situations of the internet and information and communication technologies, were discussed. Accordingly, arts education is an ongoing process, and arts teachers should always improve themselves. It was concluded that technology provides the power to create individualized education, student-centered curricula and pedagogies in the era we are in.

Freeman and Somerindyke (2001) stated that computers are increasingly becoming included in preschool curricula, and this situation affects children's cognitive development and social games. In this context, the study examined the computer knowledge and skills of small children on their behaviors. It was concluded that, when associated with instruction themes, computer use would provide significant contributions to children's increased cognitive and fine motor development, as well as their social capacity.

In the near past and the present, there are several studies that have integrated the concept of technology into arts and arts education, aimed for such integration, and been published at schools of varying levels and by arts educators, academicians and independent researchers. Taking these studies into account, it is observed that, with the start of using technology effectively in the 21st century, the concept of education has become prominent with a different structure.

Method

Research Design

This study includes the detailed analysis of the research questions of "What are the effects of technology as a material on arts education?" and "What are the forms of utilizing technology in the process of arts education?" within the scope of the master's thesis titled 'Development of arts education and materials in line with scientific and technological developments.' In this direction, in this study, it was aimed to determine the interaction of an art education that is in parallel with the dynamism of the era with science and technology. For this purpose, a case study design as a qualitative research method was used in the study. According to the explanation by Stake (2006), the purpose of a case study is to understand and reveal a selected case or cases to understand a certain topic or problem in the best sense (as cited in Creswell, 2018). Metin (2014) stated that this research design, which started to be used in education-related studies after 1980, allows detailed and descriptive examination of the topic that is studied. With consideration in the scope of the research questions, Yin (2003) specified that questions that need to be used in case studies should be in the forms of why and how (as cited in Guler et al., 2015). Considering the literature and the definitions made, a case study design was used in this study because the study was limited to a small number of individuals and required in-depth investigation.

Sample

In general, a qualitative study focuses on a purposively selected sample and a single situation in an in-dept manner (Patton, 2018). The reason for using maximum diversity in the purposive sampling method in this study is that the socio-economic levels of private schools are higher than those of public schools. Schools were selected with the idea that the socio-economic levels of these schools may affect the use of technological materials in classes. Yildirim and Simsek (2016) argued the necessity of keeping the number of participants low in case studies, because this is an in-depth and detailed research method. While selecting the sample in this study, as qualitative studies do not have a concern of generalization, importance was paid to creating a sample that would be able to respond to the research questions.

Table 1. Information on individuals who were subjected to semi-structured interviews

Participant Code Names	School Type	Years in the Profession	Education Level
Participant 1	State	26	Undergraduate
Participant 2	Private	2	Undergraduate
Participant 3	State	12	Undergraduate
Participant 4	State	6	Undergraduate
Participant 5	State	27	Undergraduate
Participant 6	Private	2	Undergraduate
Participant 7	Private	2	Undergraduate
Participant 8	Private	2	Undergraduate

The participants of this study were 5 women and 3 men, constituting a total of 8 visual arts teachers who were actively working at secondary schools in the academic year of 2019-2020. Creswell (2018) mentioned the necessity of protecting the privacy of participants by assigning them code names. Based on this idea, in this study, the real names of the participants were not used, but the code names given to the participants by the researcher were used (Table 1).

Data collection Tools

Obtaining data and in-depth information on the case under investigation is a distinctive characteristic of a qualitative case study. To achieve this, the researcher needs to collect several types of data. Basing one's study on a single data source will generally not be sufficient for developing this in-depth understanding (Creswell, 2018). Researchers, who have stated that methods such as "observation, interview (semi-structured or structured) and focus-group meeting" may be used in the data collection process, have reported that it is important to select the most suitable data collection instruments for the research that is being conducted (Bachman & Schutt, 2001; Creswell, 2016; Draus et al., 2005; Kraska & Neuman, 2008; Neuman & Wiegand, 2000). According to Yin (2003), using various data sources is a significant step in forming the databases of case studies and creating the chain of evidence (as cited in Aytacli, 2012). For this reason, to achieve diversity of the data in the study and assess the situation from different points of view, two different data collection techniques were used. These were the semi-structured interview technique constituting the main data source and the observation technique as an assistive data source (Table 2). Observation is one of the main tools for data collection in qualitative studies.

Table 2. Schedule of meetings with teachers and processes

Name	Interview & Observation Date	Interview Time	Observation Time	Meeting Place
Participant 1	29.11.19	40 minutes	60 minutes	visual arts room
Participant 2	21.11.19	40 minutes	70 minutes	visual arts room
Participant 3	29.11.19	35 minutes	50 minutes	visual arts room
Participant 4	27.12.19	40 minutes	60 minutes	visual arts room
Participant 5	20.12.19	30 minutes	50 minutes	visual arts room
Participant 6	18.12.19	35 minutes	55 minutes	visual arts room
Participant 7	18.12.19	35 minutes	60 minutes	visual arts room
Participant 8	21.11.19	40 minutes	65 minutes	visual arts room

Observation is a phenomenological process where the researcher makes records of input from their five senses usually with a tool and for scientific purposes (Angrosino, 2007, as cited in Creswell, 2018). Patton (2018) stated that, by using the observation technique in studies, the details can be noticed as a result of the information and observation obtained from the first source of the topic being researched. By means of observation, it becomes easier for the researcher to perceive the situation better and make personal comments.

In the study, the observation method of 'participatory observation' was used, and the researcher conducted the observations after explaining their identity as the researcher after the semi-structured interviews carried out with the determined sample. In the pre-prepared form, the technological materials in the educational environment, the teachers' mastery of the use of these materials, what materials they used during lectures and practices, and the reactions of the students were investigated. After the form was prepared, it was submitted for the opinions of field experts for achieving validity and reliability. The researcher recorded the observations they made with notes they took during the observation process.

Data analysis

In this study, in the process of analyzing the qualitative data, the inductive method of "thematic analysis" was utilized. Merriam (2018) emphasized the importance of organizing data in addition to obtaining data and proposed the use of codes for a more comfortable analysis and understanding regarding the data collection tools. Therefore, after collecting the interview data in this study, the data sets obtained from the interviews were converted into a written document. Afterwards, they were read with a detailed perspective, codes were created via inductive analysis, and connections among the data were established. The codes were then divided into categories and collected under themes. While determining these themes, it was ensured that the themes constituted a meaningful whole. During the process, field experts were consulted, necessary changes were made, and validity and reliability were ensured. Some observation data were included in the findings and comments when necessary.

Findings

The '*Reflections*' and '*Usage Methods*' themes included in this study contained findings regarding development of arts education materials in line with scientific and technological developments. Inside the '*Reflections*' theme created in this context, there were two categories as '*Positive Effects*' and '*Negative Effects*'. There were the *'In-class Instruction', 'Student Applications'* and *'Institution Opportunities'* categories within the '*Usage Methods*' theme. In this theme, there were findings on how the visual arts teachers made use of technological materials to help students acquire the targeted learning outcomes of the class.

The '*Positive Effects*' category under the '*Reflections*' theme consisted of six codes as '*Motivation level*', '*Permanent learning*', '*Direction to research*', '*Raising curiosity*', '*Creating awareness*' and '*Making application-operation steps easier*'. These codes were under this category in terms of containing the positive effects of materials developed in line with the technology age on visual arts education (Table 3).

Table 3. Reflections Theme, categories and codes

Positive Effects	Negative Effects
Motivation level	Constant repetition
Permanent learning	Out of purpose use
Direction to research	Direction to laziness
Raising curiosity	

In the detailed examination of the '*Motivation level*' code, it was determined that the visual arts teachers who were interviewed had a consensus on the idea that the usage of technological education materials in taking students to projected goals has positive effects. Mentioning the positive effects of using technological education materials and applications inside the classroom, Participant 3 said, *"While using slides, we materialize a topic or a painter we are verbally talking about by supporting the topic with visuals of the paintings of the painter. When I make a slide presentation, etc., it becomes useful for reaching the classroom, classroom management and student motivation. We complete the parts that fall incomplete in instruction with visuals"* (s.1). Participant 1 supported the views of Participant 3 by stating *"…of course, it increases the motivation level. …because the attention of the student may be disrupted after a point due to the monotonicity of the lecturing of the teacher."* (1st Interview). In the observation of the researcher, there were the data suggesting that the participation of the students in the classes that the teachers taught was achieved with slide presentations. This situation was an indication that the students' interest in the class was increased.

Under the code '*Permanent learning'*, the visual arts teachers emphasized that technological education materials and conventional education materials meaningfully support each other in educational settings, and this situation facilitates permanent learning in the student. Regarding this situation, Participant 5 mentioned the usefulness of using technological education materials inside the classroom in terms of facilitating permanent learning by stating the following: *"While I use the regular board for practices such as writing, drawing and painting, I prefer to use smart boards, projection, computers, etc. among technological education materials in the theoretical teaching part. This allows a more permanent learning in the theoretical and applied parts of the class."* (1st Interview). Participant 1, who focused on students' learning by experiencing in reaching permanent learning, emphasized the relationship between permanent learning and technological education materials with the following statements: *"Children need to learn by experiencing. We should also provide the children with these opportunities with technological education materials that appeal to both*

the eyes and the ears. If this new education system gets settled, I think a more permanent learning environment will be formed." (1st Interview). Participant 7 supported the statements of other participants by saying, *"If I need to repeat, regarding motivation, I think I can influence students by presenting them with visuals of the works of a painter of that period while teaching an art movement. When you appeal to the visuals of the student, permanent learning occurs in them."* (1st Interview).

The *'Direction to research'* code included findings on raising feelings of curiosity and willingness to learn the topic deeply during the class and directing the student towards doing research in this sense. On this issue, Participant 1 stated, *"After permanent learning, the feelings of admiration and curiosity that you wake in students lead them to do research. The student who wants more than the information given to them can reach all kinds of information by also using internet sources,"* (1st Interview) indicating that, after material use in the classroom and effective in-class teaching, students are able to do research by utilizing internet sources, social media and digital platforms. Participant 2 had views supportive of Participant 1 and other participants as, *"When I teach a topic for the classroom, the student can reach extra information about the topic by using the internet with a computer, and they do. They can even reach all information about the works, lives and techniques of artists"* (1st Interview).

The '*Raising curiosity'* code included findings on the finding on the view that, by using technological education materials for attracting the attention of students to the class during instruction and achieving order, the teachers could raise the feeling of curiosity in the students. Participant 4, who said, *"When you start the class firstly by slide presentation, you awaken the feeling of curiosity in the child. …and you manage to hold their attention on yourself for a longer time than normal,"* (1st Interview) emphasized that they could keep the attention of students live for a longer time by using technological education materials in the class. On this issue, Participant 2 supported their colleagues and emphasized the same point by saying, *"Paint is not as valuable as it used to be in our time for most children today. …because there is a different world now. That is, the issue has a technology dimension; visuals on the screen attract more of their attention. Application materials in the class fall insufficient for them, do not get their interest"* (1st Interview) and argued that students may be motivated more during a class with technological education materials. During the observation, it was observed that the students asked questions about the visuals presented by the teacher. This situation was in line with the '*Raising curiosity'* code.

The code '*Creating awareness*' consisted of findings on the teachers' opinions that the visual perception levels of students increase, and awareness is raised in this sense by using technological materials during a class. Participant 2, who stated their thoughts on this issue in consensus with other participants and in a more detailed manner expressed the following: *"I also observed different changes. I can express it as follows; there used to be a perception that if you have talent, you can draw, but with the contribution of technology to arts, everyone has noticed that they could draw and prepare a visual design. They may find it difficult to draw by hand, but the digital environment may provide an opportunity for the child to express himself."* (1st Interview). With these statements, the participant clearly expressed their view that even students with limited talents may utilize technology in visual arts classes, and this may contribute to the formation of their areas of freedom.

The *'Making application-operation steps easier'* code was obtained from the expressions of most of the teachers on the idea that the usage of technological education materials in education and instruction environments makes application steps easier for students. Among those who held this opinion, Participant 8 said the following: *"If we consider this question on the basis of technology design, as operation steps are longer, computer programs and tablets to be used in classes that require more performance may shorten these steps,"* (1st Interview) emphasizing that education and instruction materials developed in the era of information may be helpful in making application-operation steps easier. It was observed that some teachers used videos to show the application steps. In this case, it was seen that the students made the application process easier.

The '*Negative Effects*' category consisted of three codes as "*Constant repetition', 'Out of purpose use'* and '*Direction to laziness*'. These codes under this category included the negative effects of materials developed in line with the technology era on visual arts education in detail.

The '*Constant repetition'* code involved findings where statements were made on that the continuous use of materials that enter education environments in line with the technology era may create negative effects. On this topic, by saying, *"…maybe, dependence on the material may develop in the child due to the excessive use of it. It is needed to establish the balance well, not completely give up conventional education, but synthesize both,"* (1st Interview), Participant 2 focused on the use of technological and conventional education materials in a way to support and complement each other. In Participant 7's statement as *"The children do not use individual tablets. While presenting application examples, I also avoid using smart boards too actively. …because I think it limits the imagination of the children. Our concern is not for children to constantly produce by looking at something or consuming what is available. That is, it feels like, opening a sample piece of work on the smart board and saying let us repeat this,"* (1st Interview) there were opinions indicating that it would not be a meaningful learning process to present an existing visual to students, copy it and have constant repetitions. It was observed that, when the same visual was emphasized for a long time, students tended to imitate the visual in practice. This situation causes a negative effect on presentations that do not vary.

The code '*Out of purpose use*' was derived from the statements of some of the participating visual arts teachers that technological education materials may create negative outcomes such as usage out of their purpose. Participant 5, who made detailed explanations on this issue said, *"…but if the use of tablets etc. among students in the classroom environment were prevalent, I doubt it would have a positive outcome. It does not seem like it would be good. I, as a teacher, do not think a practice like fitting all books into a flash drive will be positive. It would not be a use suitable for the purpose. The student prepares to go to school. This means the student is preparing their backpack, organizing their books and preparing themselves mentally for the new day. The student's arrival at the school by putting their tablet and flash drive into their pocket does not prepare them for the education and instruction environment."* (1st Interview). With this statement, while focusing on the necessity of students making certain arrangements to prepare for the new course day, the participant expressed their opinion that elimination of these steps and complete surrender of education environments to technology will negatively affect students.

The '*Direction to laziness*' code was obtained from the subjective criticisms of the participating teachers. On this topic, when Participant 7 said, *"While mentioning the positive aspects of technology, on the other hand, I think what technology brings makes teachers lazier. In the past, in the absence of smart boards, the teacher needed to spend time for class preparation. However, when there is a smart board in question, the teacher can come to the class by obtaining a ready slide show five minutes before. Teachers should not allow technology to make them lazy,"* (1st Interview) they considered the case that technological education materials may provide positive results as a negative consequence. In this context, they emphasized that teachers need to avoid being directed towards laziness by technology while being open to development with technology. It was observed that student works are not original when there is no visual variety in the presentations.

Under the theme '*Usage Methods*', the '*In-Class Applications*' category consisted of six codes as, '*Slide presentation*', '*Video instruction*', '*Short film display*', '*Virtual museum tours*', '*Internet use*' and '*EBA (Educational Informatics Network) application use*'. With the second research question of the study, the current technological education materials over which the teachers had command, which materials they used in education-instruction areas, course teaching processes in the curriculum and in the scope of the applications of students and how they used these materials were presented in detail and gathered under this category (Table 4).

Table 4. Usage Methods Theme, categories and codes

In-Class Instruction	Student Applications	Institution Opportunities
Slide presentation	Use of graphic design programs	Active use
Video instruction	Use of computer programs	Passive use
Virtual museum visits		
EBA application use		

The '*Slide presentation*' code was obtained from the responses of the participants to the question 'In what ways do you utilize technological developments in educational settings as an arts educator?' in the semi-structured interview form. All participants reported that they used '*Slide presentation*' in the classroom to increase participation. For example, in their explanatory response including examples, Participant 6 stated that they prepared slide presentations for in-class instruction by saying, *"I use slides much individually on the basis of my class. For example, today's topics were Michelangelo for 6th-graders and Rembrandt for 7th-graders, and I prepared slide presentations for them."* (1st Interview). Participant 4, who provided similar opinions, stated that the smart boards in the classroom were actively used with slide presentations with the following statements: *"There are no materials specifically developed for the visual arts course, but we prepare slides as in other branches and use the smart boards in the classrooms."* (1st Interview). From the observation data, it was found that the teachers mostly used slide presentations, while some teachers also benefited from video display and smart board applications.

In the '*Video instruction*' code, there were findings on that the visual arts teachers supported their topic teachings over internet sites or EBA applications with videos. Participant 8, who responded to the second question said, *"Besides what I listed, when I have the class perform an applied activity in the classroom, I utilize video instruction as a support element for me,"* (1st Interview) revealing that they received support from video instruction and short films for in-class instruction. Participant 7 emphasized that they motivated students by using video instruction among technological education materials in their in-class instruction as *"Additionally, of course, I motivate students, show exemplary works and have them watch videos."* (1st Interview). However, the common opinion of some teachers was that video instruction materials were inadequate.

'*Virtual museum tours*' was a topic that was mentioned as a digital source by some of the teachers in the semi-structured interview form. All teachers stated that they had knowledge about virtual museum tours. On this topic, Participant 7 reported that they utilized virtual museum tours during instruction by saying, *"In addition to watching videos and short films about the topic, we do virtual museum tours. However, while I am aware of their existence, I do not use them frequently"* (1st Interview).

The *'EBA application use'* code consisted of the expressions of the teachers that EBA applications were insufficient for their classes. They stated that usage of EBA applications was not as active as other branches, and as a reason for this, the instructive videos and presentations developed for the visual arts course were inadequate in meeting the targeted outcomes in the curriculum. By emphasizing the importance of the issue more in comparison to the other participants with their statement *"On EBA, children can ask questions, you can get feedback. There is a remote-controlled system. Children have the opportunity to answer questions in classes with the remote controllers they have. At this point, there is no material developed for the visual arts course,"* (1st Interview), Participant 3 pointed out that the video instructions and presentations on the EBA application prepared for the visual arts course were inadequate.

The *'Student Applications'* category consisted of two codes as *'Use of graphic design programs'* and *'Use of computer programs.'* Findings on what materials and applications the visual arts teachers used or thought of using to best transfer the targeted outcomes of the course to the student were explained with these codes.

The code *'Use of graphic design programs'* was obtained from the views of the teachers working at private institutions that they used graphic design programs and of the teachers working at state institutions that these programs need to be used. Participant 1 who was working at a state institution said, *"…considering how technology could be used in our classes, looking from this point of view, many things can be done. Our job is visuality, our activities, colors… I, for example, frequently utilize the mobile phones of students as the opportunities of the institution are limited. In this sense, I believe several programs need to be used."* With their statement *"With the shift of also the visual arts towards technology, for example, I now have a Photoshop club. For me, as materials, there are photoshop programs and computers here. With a simplified instruction program, we learn to use photoshop programs like Adobe, Illustrator, Sketch Art,"* (1st Interview). Participant 2 employed at a private institution stated that graphic design programs among technological education materials were used, and positive feedback was received. The visual arts teachers had a consensus on that digital designs and drawings should be included in the curricula today. They believed that awareness in the field of visual arts may be provided to students in the case that sufficient application areas and equipment are provided for institutions.

The *'Use of computer programs'* code included the views of the visual arts teachers, who had taken on the mission of following the dynamics of the developing age and adapting to these dynamics, that applied activities need to be supported with digital materials. Participant 7 expressed that they used different computer programs in their classes with their detailed response as *"As I mentioned, in our pop art activities, in the theoretical teaching step before application, we use the smart board, computer, paint, projection materials in varying application processes. For example, while the students were designing their own work, they prepared different variations of the selfies they took in a computer program by inspiration from the famous Marilyn Monroe work of Andy Warhol. Afterwards, by using projection, we transferred their sketches prepared on the computer onto canvas. In the application part, the students used paint and brushes"* (1st Interview).

The *'Institution Opportunities'* category consisted of two codes as *'Active use'* and *'Passive use'.* By taking the main views of the interviewed visual arts teachers as a basis, these codes were reached from findings on the materials their institutions had and the use of these materials.

The code *'Active use'* was derived from the statements of all interviewed teachers that they frequently used materials that are the requirement of the technology era such as smart boards, computers, tablets and smartphones. Participant 3 said they actively used technological education materials like the other participants as follows: *"There are smart boards at our school, and we are using them actively in visual arts classes"* (1st Interview). Another usage area that was revealed in the analysis of the findings obtained as a result of the researcher's observations and the interviews conducted with the visual arts teachers was that digital platforms were being used as parent information tools. At state institutions, teachers can reach parents constantly by entering grades from the e-okul [e-school] and k12 systems. At private institutions, in addition to k12, it was witnessed through the observations and interviews that the teachers achieved communication with parents and amongst each other by using the software developed by their institutions. Participant 7 employed at a private institution said, *"In addition to these technological tools and digital instruments, there is an application of our school for parent information, communication with students and follow up for teachers,"* (1st Interview) expressing how materials developed in line with the age of information and technology were utilized by institutions within the context of their means. It was observed that the conditions of private schools provide more opportunities to use technological materials.

The code *'Passive use'* was derived from the views of the visual arts teachers that, while they used technological education materials in their in-class instruction, they limited their usage rates with the thought that excessive usage may lead to negative outcomes. With their explanation *"Today's generation is so turned towards telephones, tablets and computers that, when we cannot adjust the usage rates of these materials, instead of creating and implementing, students may find it more appealing to merely look at a screen. Maybe, they will only want to talk about what they watch. Rather than consuming what exists, I think we should encourage the student to reproduce with technology,"* (1st Interview) Participant 7 emphasized paying attention to the usage rates of new-generation education materials. Participant 1, who had a similar view, supported Participant 7 by saying, *"In the classroom environment, we do not approve of using smart boards throughout the entire class. …or, for example, while starting a topic, I do not want to show the completed forms of*

works. …because I think this kills creativity. Maybe, the children will reach different results, but when they see the outcome, they try to produce exactly the same thing. Its negative aspect is that it excessively gets children used to what is readily available" (1st Interview). Participant 1, who detailed their views, expressed the following regarding the limitation of the use of technological materials: *"…but, unfortunately, children in this era do not keep information. They take the information, consume it and throw it into the garbage. As in the life of today, it is also so in our classes. In fact, it is as if we are writing on water… I think it is more appropriate to direct [students] towards doing research instead of leaving the entire class in the hands of technological materials"* (1st Interview).

Discussion

Bork (1992), who emphasized that progressing with a single learning strategy will be insufficient in the process of providing the student with information, recommended providing the student with various learning strategies and mentioned that multimedia technologies may be utilized in this process. According to Barr (1990), when different learning models are aimed, learning may be supported with various technological materials to make it more independent, customized, interactive and interdisciplinary. Wilks et al. (2012) stated that, by including technology and the tools that it brings in visual arts courses in the era we live in, a foundation is prepared in terms of achieving individualized education and creating student-centered curricula. There is a question of not training the individual from one aspect but by taking them on as a whole with their cognitive, psychomotor and sensory aspects. This is why Fine Arts education has a special place alongside science and technical education within the concept of contemporary education and its practices (San, 1990).

According to the data obtained in this study, technological education materials used in the classroom provided benefits in terms of classroom management, motivating the student and raising feelings of curiosity. Yilmaz and Unalan (as cited in Bolukoglu, 2002), who claimed that the student may utilize visual, auditory and multidimensional application opportunities with the help of computers and the internet in learning environments, pointed out that students are able to comprehensively utilize the resources they can access via the internet, and this develops them multidimensionally. They also explained that technological developments may support the student in the improvement of their artistic design with new options. According to Dolunay (2016), when students who are receiving arts education perform their sketches and works in digital environments, this not only shortens the time that passes until the work reaches its final form but also provides the capacity of looking from very different perspectives. The findings obtained as a result of this study were compatible with the literature, and it was determined that, in applications that require time-consuming operation steps, the application and operation steps could be shortened by materials used within the visual arts course.

It was also identified from the findings that, in addition to positive situations reflected on students, the constant use of the materials in question may lead to limitations. On this topic, Bozkurt et al. (2016), who reported that, while some certain people limit their internet use with their needs, some others do not take part in such a restriction, emphasized that these people may encounter some problems in their work and social lives. This study revealed the assumptions of the participants on the failure of the teacher to positively plan the class flow with technological materials, limitation of the imagination/creativity of children by factors such as development of dependence to course materials and information, communication and internet technologies, adoption of consumer culture and outcomes like repetition.

The visual arts teachers preferred usage areas in their in-class instruction such as slide presentation, video instruction, short film displays, virtual museum tours and EBA applications. The use of the aforementioned course materials may make the course interesting for the student. Frequent utilization of visual elements in arts education leads to an increase in the creativity aspect of individuals, a better understanding of art, easier self-expression by individuals and their ability to transform their emotions and thoughts into visuals on an intellectual level (Artut, 2004). In addition to all these positive situations noticed in students, there was also a focus on the idea that students may be more motivated during a class with technological education materials.

Considering the findings obtained throughout the study and the relevant literature, it was determined that use of technology as a material in visual arts education is an effective method for the student and the teacher, and positive views were dominant. In their study which discussed technologies and tools included in visual arts classes and the usage cases of computers, the internet and information and communication technologies, Wilks et al. (2012) emphasized the need for arts teachers to improve themselves in their field like all other teachers. Accordingly, the necessity of all arts educators to follow new technological developments to be able to keep up with the era becomes prominent.

Conclusion

The themes of '*Reflections*' and '*Usage Methods*' that were put into the center of this study were shaped in the scope of the research questions of 'What are the effects of technology as a material on arts education?' and 'What are the forms of utilizing technology in the process of arts education?' These include not only positive but also negative contributions provided to students and field teachers by materials that are used in visual arts classes.

In the positive effects category under the Reflections theme, it was revealed that, while technological education materials used inside the classroom provided benefits in terms of reaching the classroom or motivating the student, they also supported the permanent learning process. The visual arts teachers frequently emphasized that, by providing students with exemplary application visuals or the visuals of the works of the painters of a period in art history, they were able to facilitate permanent learning.

In the negative effects category under the Reflections theme, the focus was on that all teachers interviewed in the scope of the study avoided the excessive use of these materials due to their concerns that negative effects could arise. In general, the teachers presented their projections regarding the issue that the constant use of materials may lead to the formation of dependence to course materials, limitation of the imagination/creativity of children, adoption of consumer culture and constant repetition.

In the in-class instruction category under the Usage Methods theme, the results revealed that the visual arts teachers preferred usage areas in their classes such as slide presentations, video instruction, short film display, virtual museum tours and EBA applications. While the vast majority of the visual arts teachers stated that they actively utilized these methods, it was concluded that, although they had knowledge of virtual museum tours, these did not have active usage in the classroom. One of the results in the category of student applications under the Usage Methods theme was that, while the use of graphic design programs was not prominent on the secondary school level, they were utilized under the name of 'Photoshop Club' only at private institutions. The visual arts teachers emphasized the necessity of including digital designs and drawings in the curricula today. They reported that, if sufficient application areas and equipment were provided at institutions, this would provide students with awareness in the field of visual arts. In the institution opportunities category under the same theme, findings that technology was used as an extracurricular communication and information tool in addition to its usage as an education material were revealed. The schools were using digital platforms as parent information tools. While teachers at state schools could reach parents constantly by entering grades from the e-okul [e-school] and k12 systems, at private institutions, in addition to k12, it was observed that the teachers achieved communication with parents and amongst each other by using the software developed by their institutions. Moreover, it was witnessed that passive use situations emerged due to the fact that not every school had equal physical conditions and opportunities and concerns that the excessive use of materials would trigger negative outcomes.

When the results obtained from the categories of the Reflections and Usage Methods themes are assessed in general, it is seen that including technological education materials in visual arts courses carries great importance in terms of planning a visual arts education process in parallel with the dynamism of the era. In this context, providing the necessary equipment in classrooms is important in terms of motivating students, raising feelings of curiosity among them and providing them with awareness in visual arts classes.

Recommendations

The direction in which technology will influence art is under debate. However, it is among undeniable facts that technology leads art in a positive or negative way. Looking at art history, the tangible examples of this may be seen. In this period, where the intervals between changes and developments with technology are becoming shorter, change occurs as a society when it finds application areas with the right directions. The visual arts teachers of the future should be trained as individuals who follow today's technology in the best and most accurate sense, are knowledgeable about the latest developments and ready for changes in the future. They should closely follow work that is conducted both in their countries and worldwide. Today, art also maintains its existence by evolution via technological developments. The individuals who will transfer this process to future generations and teach them the necessity of art will be arts educators. In this context, arts educators should keep up with the dynamism of the age and have awareness. It may be stated that there has been an increase in terms of technology use between the necessities of the period where this study was conducted and the necessities of today. Today, due to the COVID-19 pandemic experienced worldwide, using technology has become a requirement.

It is known that, especially smart boards, and computers, tablets, projectors, smartphones that could be considered the most popular ones among mass communication tools, e-books, e-magazines, PDF reference books, slide presentations, video instructions, short film displays, virtual museum tours and EBA applications are actively involved in visual arts education methods in Turkey, as in the case of education in general. The usefulness of utilizing these materials in educational settings for the student and the teacher is well-known. Nevertheless, it is another topic of discussion that EBA applications are limited in the scope of the visual arts course and need to be improved. In addition to EBA applications, it is known that there is a need to create digital communication platforms for field teachers such as information pools and activity pools.

Considering institutional opportunities on the basis of technological material use in student applications in Turkey, while the usage situation is limited in certain regions, it was revealed in this study that private institutions carried out practices under the names of digital design and Photoshop clubs. However, due to the limited physical opportunities and equipment in most state institutions, it was observed that these materials were only used as supportive elements

for the teacher in the classroom environment in the technological sense, but they were limited in terms of student applications. Based on this information, it is needed to provide physical opportunities where applications may be performed at state schools. To be able to achieve productivity in technology-assisted arts education that includes many alternative methods, it is needed to support the professional field knowledge and technology-assisted arts education experience of arts teachers and create appropriate curricula for this field. It is recommended to conduct studies on the effects of classes supported by technological materials on students, teachers' mastery of new technologies and the equipment that schools have.

Limitations

The results of this study are limited to the data collection instruments that were used and the thematic analysis of the data obtained from the interviews (semi-structured interview form, interview, audio recording; 8 weeks) conducted with a participant group of 8 individuals who were working as visual arts teachers at education institutions under the Turkish Ministry of National Education (MEB) (State Secondary School, State Religious School and Private Secondary Schools). Conducting studies that will be planned by placing the effects of technology on visual arts education at the center and reconstructing these methods in different provinces and with different points of view will contribute to the literature in this field.

Authorship Contribution Statement

Tetikci: Conceptualization, design, drafting manuscript, securing funding, admin, technical or material support, supervision, concept and design, final approval, editing/reviewing, writing. Erim: Conceptualization, design, data analysis/ interpretation, editing/reviewing, supervision, securing funding, supervision, concept and design, final approval, writing. Bozlak Halaclar: Conceptualization, data acquisition, data analysis/ interpretation, editing/ reviewing, drafting manuscript, writing.

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