SECOND LIFE IN ART AND DESIGN FROM STUDENTS' PERSPECTIVE: A CASE STUDY

Dr. Sevda CEYLAN-DADAKOGLU
ORCID: 0000-0003-2583-6368
Ministry of National Education
Ankara, TURKIYE

Received: 26/12/2020 **Accepted:** 05/07/2021

ABSTRACT

This article tried to determine the students' opininons related to the use of Second Life (SL) application in higher education art and design education. In this case study conducted with 17 students selected via typical case sampling, the SL virtual platform was used as a research area. Data collection tools were included document analysis, self-peer-process assessment, focus groups. Research data were analyzed with content analysis. Participants stated that the use of SL application in art and design education provides support for analysis of 3D programs, virtual exhibition opportunities and simple 3D modeling. Internet speed, slowness of computers, technical and build problems were the common difficulties experienced by the participants. Consequently, the participants' application skills, 3D thinking skills, design skills and creativity during the practise of the SL application improved. Despite some technical difficulties in understanding SL, it is thought that SL is a suitable environment for art and design education. Also, due to the Covid-19 pandemic, most of the education activities, are conducted on virtual environments. Therefore, it is thought that SL will contribute to distance education by online learning.

Keywords: Art and design education, Second Life, 3D thinking skills, student opinions, online virtual learning, distance education.

INTRODUCTION

Education systems are in a constant transformation. Each new age reorganizes the teaching methods and environments by including the tools that it considers appropriate to the educational environment. In our age, this situation can be explained by digitalization. Today, in many scientific studies, virtual worlds, virtual reality and the virtual medium, which are referred to by different names, are effectively studied and used. Girvan (2018, p.1099) defines virtual worlds as "shared, simulated spaces which are inhabited and shaped by their inhabitants who are represented as avatars". The usage areas of three-dimensional simulation programs, which are one of the virtual worlds, have expanded as much as possible. These programs, enables people to represent themselves visually and can be addressed to different senses through user interaction. It can can create a sense of presence in the environment in the user, can provide intuitive interaction with real-time natural orientations, create a secure environment and thus make the virtual world more visual and realistic (Mikropoulos & Bellou, 2006). In addition, having the motivating feature of virtual reality, being effective, practical, providing opportunity for repetition, being instructive, enabling skill learning, saving time, presenting different places to users, allowing various variations, increasing physical activity and providing different experiences are among the remarkable qualities (Kalkan, 2020). Virtual worlds provide opportunities for skill training that involves high risk or is difficult to implement. It provides the opportunity to make experiences that are impossible to apply. For example, a physics experiment can be designed and implemented in a virtual laboratory. Environments that cannot be reached under normal conditions (moon surface, seabed, natural habitats of wild animals, etc.) can be designed in 3D and experienced in virtual reality. Using the avatar reduces the feeling of social disconnection (immersive). It contributes to distance education by providing a realistic environment through simulation (Karabatak, 2020).

The study area of this article has been determined as the Second Life virtual World. Harrison (2009) states that SL is designed as an alternative utopia to the real world. SL is defined as a "3D, online virtual world created by Linden Lab, containing persistent content created by its Residents" (wiki.secondlife.com, 2021). SL is a platform among three-dimensional educational environments, helps the use of various educational disciplines such as collaborative learning (Erbas & Demirer, 2015), experimental learning, (Wang, Grant & Grist, 2020) game-based learning and role-playing learning (Can, 2012). Therefore, it is thought that the student supports own learning (Wang, Grant & Grist, 2020).

SL is an online, 3D, multi-user platform where users can represent themselves via avatar and thus feel themselves inside the application. SL has great potential, especially for distance learners (Burgess et al., 2010). Distance education can be traditionally defined as the physical separation of student and teacher. However, even though it is difficult to completely eliminate student-teacher physical separation with the use of digital technologies, it may be possible to create a collaborative, virtual pedagogical space that reduces the distance between them (Anderson & Rivera-Vargas, 2020). This distance between students and teachers can be reduced by the immersion and presence feature of virtual environments. Immersion and interaction which are considered as the main features of Second Life, show that the user can relate to the environment in many ways through user avatar (Fedeli, 2016).

In SL, educators can organize activities such as seminars, conferences, symposiums simultaneously with the real world. Various leading universities of the world, such as Saint Leo University Virtual Campus, Stanford University Libraries, Open University, have established virtual campuses and include SL in their education programs (wiki.secondlife.com, 2021). SL contributes to skills such as socializing, research-discovery, visual design, communication, collaboration, problem solving, critical thinking, developing psychomotor skills, contributing to linguistic-cultural development by developing digital visual culture and virtual literacy skills (Karabatak, 2020).

The use of three-dimensional virtual worlds in art education is one of the frequently discussed topics (Han, 2016, 2019, 2020; Banic & Gamboa, 2019; Erkan, 2020; Dolphin, 2020; Kaur, 2019). Loveless (2002) stated that individuals can embody their original and creative ideas by using information and communication technologies. Today's students are more capable and comfortable in using technology and learning materials (Wang & Braman, 2009). The art educators of higher education warn the schools to discover, experiment and embrace some parts of constantly evolving forms of education by encouraging students' unreachable imagination in diffrent ways and and they are trying to merge the education with other technologies and disciplines (Salman, 2009 as cited in Stokrocki, 2011).

When the methods used in art and design education are evaluated, the scarcity of teaching and learning processes in 3D virtual worlds draws attention (Fleischmann, 2020; Dreamson, 2020). This situation strengthened the idea of using 3D virtual environments in our research. In addition, the rapidly developing technology of our age supports the idea of using virtual environments in art and design education. Today, however, the world is facing an entirely new situation. Covid-19 pandemic is forcing all education providers to migrate courses to online learning platforms (Dreamson, 2020). Therefore, not only due to the technological advances of our age, but also due to the epidemic, it is necessary to harmonize the methods used in art and design education with technological developments. Based on these ideas, it was decided to use 3D, online multi-user virtual environments in higher education art and design education. In this process, it was aimed to reveal the positive and negative aspects of art education in virtual environments, considering that the views of the participants should be taken into account. For this purpose, SL application has started to be used in higher education art and design education. Using the "Second Life" application, which is a 3D online life simulation, in the art and design education process carried out in higher education, taking the opinions of the students and examining the dimensions of these opinions constitute the problem presented by this article.

Today, the use of the SL application becomes even more important in the light of the Covid-19 epidemic and the discussions surrounding online learning. Given the improvement of online, 3D environments, affecting the creative industry, and the need for social distancing, SL should be effective. In this connection, this paper aims to determine what students' opinions about the use of Second Life application in art and design education. In order to achieve this goal, answers were sought for the following questions.

1- "What are the students' views on the use of Second Life application in art and design education?"
2- "What are the views of the students about the works obtained in the art and design course where Second Life application is used?"
3- "How does the Second Life application affect the learning process in art and design education?"

With the data obtained within the scope of these questions, it is aimed to reveal students perspectives on the use of SL application in higher education art and design education and the effect of SL on learning processes. It is thought that the findings and results obtained from this research may strengthen the idea that the SL virtual environment can be used as an alternative environment in line with the goals of art and design education. This article also refers to the importance of virtual learning and students' continuous learning during the ongoing global pandemic. The issue is important and current given less human interaction due to the need to maintain social distance protocols. From this point of view, this article is expected to contribute to distance art and design education by online learning.

METHOD

This study, in which students' views on the use of SL application in art and design education are interpreted, was conducted with the "Case Study" design, one of the qualitative research applications. "Case Study" is an empirical research method that works on a current phenomenon within its own real-life framework, is used when the boundaries between the phenomenon and its content are not clearly clear and when there are more than one evidence or data source." (Yin, 1984 as cited in Simsek & Yildirim, 2016, p. 289). The situation studied in this study is the views of students on the use of SL application in art and design education. In this study, it is aimed to describe the current situation in depth and understand people's perspectives.

Participants

The sample of this study; 6 of them are in the 3rd class of TOBB University of Economics and Technology, Faculty of Fine Arts, Design and Architecture, Visual Communication Design Department, 6 of them are in the 2nd class of Gazi Education Faculty, 5 are in Giresun Gorele Fine Arts Faculty, Graphic department consists of 17 students studying in the second grade. Participants were identified through "Typical Case Sampling". Typical Case Sampling, one of the non-probabilistic sampling method; "requires determining a situation typical of many situations in the universe regarding the research problem and collecting information on this sample" (Buyukozturk et all, 2016, s.91).

Looking at the demographic characteristics of the participants; it was observed that 11 of the students who participated in the research voluntarily were girls and 6 of them were boys, and the age range of the participants varied between 19 and 23. Each participant who volunteered from three universities providing art and design education was included in the study.

During the 12-week implementation process, depending on the situation under study, the researcher is a person who directly meets the participants, shares the same environment and uses her perspective in data analysis, that is, both the practitioner and the participant observer. Thus, the researcher aimed to support comments on the findings. Researcher as participant observer; fulfilled tasks such as explaining how SL was applied to the participants in a virtual environment, observing and motivating the participants, meeting with the participants, providing technical support to the participants.

The SL virtual platform, which offers the graphic workshop course and 3D technologies to the use of learners in an educational framework, has been determined as a research area. SL is an internet based life simulation. Each avatar causes a concentration on the internet and it becomes impossible to build in areas where avatars are concentrated. In order to avoid this problem, the researcher rented working area with a building permit in the Happy Hippo Building School's sky. The working area has shown in Figure 1-4 and the stages of the research are as in Figure 5.

Figure 1. Happy Hippo Building School

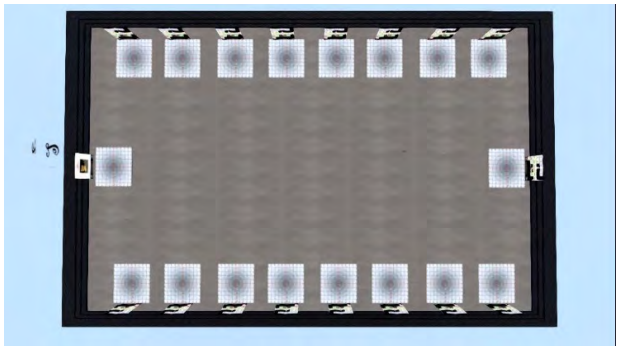

Figure 2. View of the working area from the top

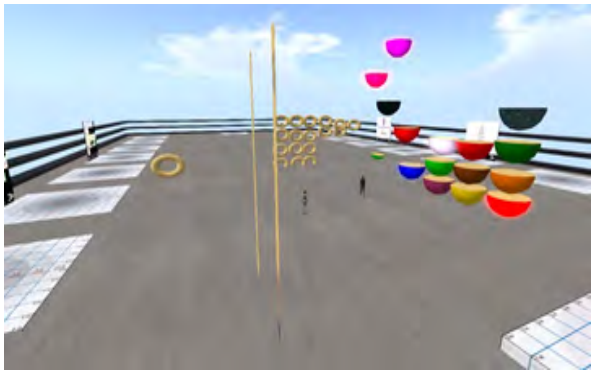

Figure 3. View of the working area from the acroos

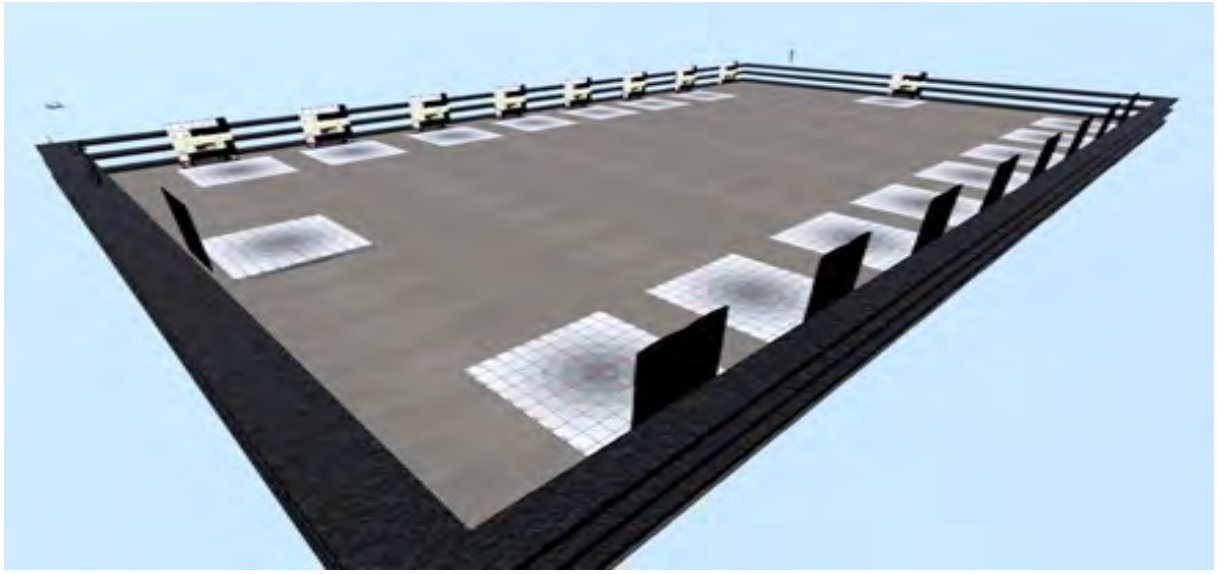

Figure 4. View of the working area from the corner

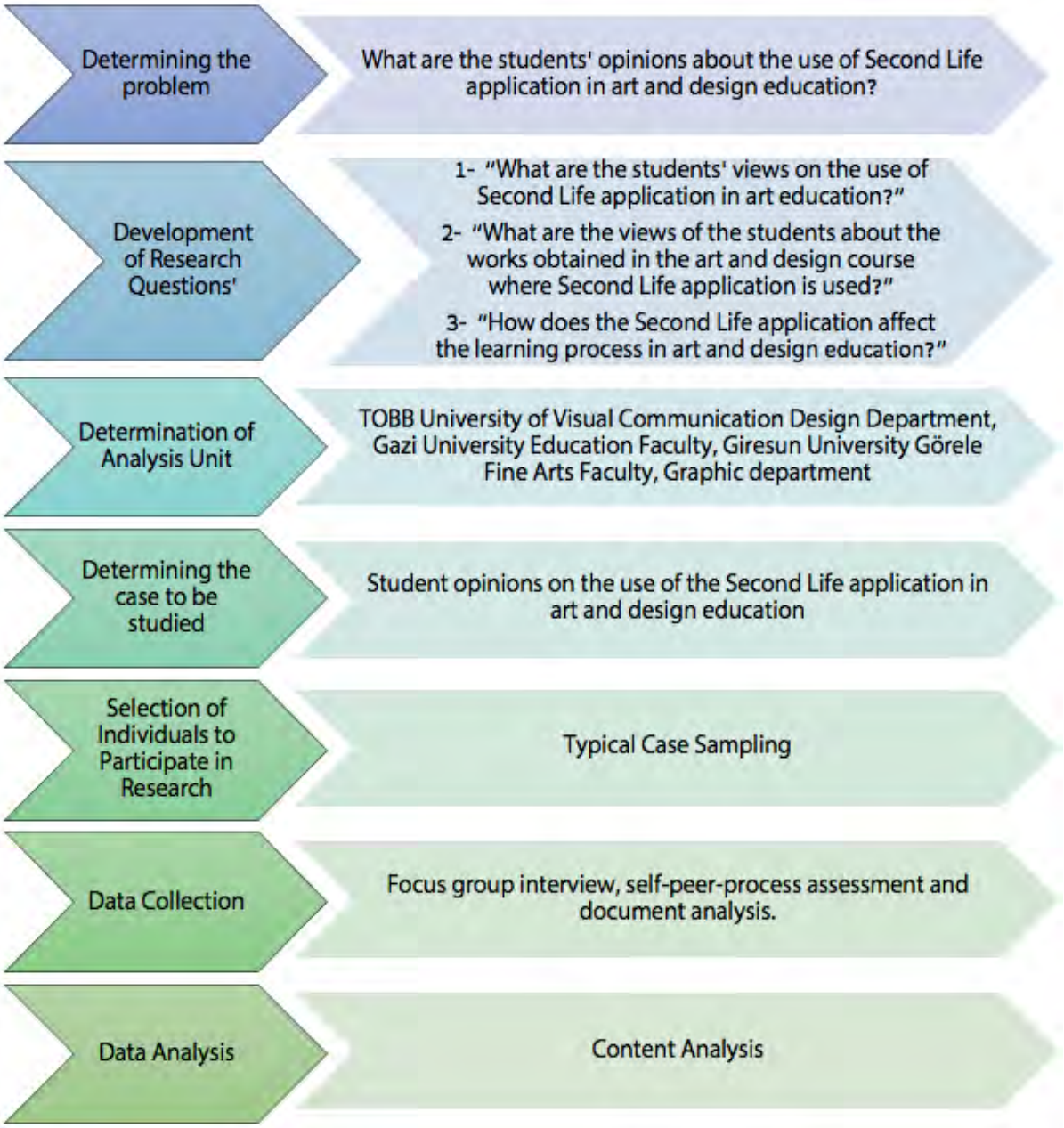

Figure 5. The stages of the research

Data Collection

The working group built the exhibition design in a 12-week period using the virtual world of Second Life. In this study, design process is examined. Data related to the process and perceptions were used in the study. While the data on the process were related to what was going on during the research and how it affected the research group, the data pertaining to the perceptions are related to the thoughts of the individuals included in the research group about the process (Yildirim & Simsek, 2016).

In the study, triangulation has been made in data sources in order to learn different aspects and formations of reality, to reveal different perspectives, different indicators and meanings. "Put simply, the concept of triangulation means that an issue of research is considered from (at least) two points or perspectives." (Denzin & Lincoln, 2018, p.779). Diversifying data sources; it is a tool in which multiple data types are associated with each other. These data are obtained from direct observations, interviews, analysis of the materials used, information gathered with interpretation or assesment. In addition, triangulation can provides opportunities to the researcher for to strengthen the credibility of the research (Eisner, 2017).

In this study, which was conducted with qualitative research method, data were obtained through focus group interview, self-peer-process assessment and document analysis. All data were analyzed by content analysis. Interviews were conducted with the activities of the researcher who was a "Participant Observer". All data has been collected via internet. Collection of data related to the process (SL chat log, Whatsapp chat records, e-mail, sms, etc.) continued throughout the application, regardless of a specific time period. After the development of the research question, determination of the participants and the creation of the study area, the data related to the perceptions in the research were collected as in Figure 6. Before the study started, the necessary "Ethics Committee Approval" was obtained from Gazi University Ethics Committee for all data collection tools used in the study.

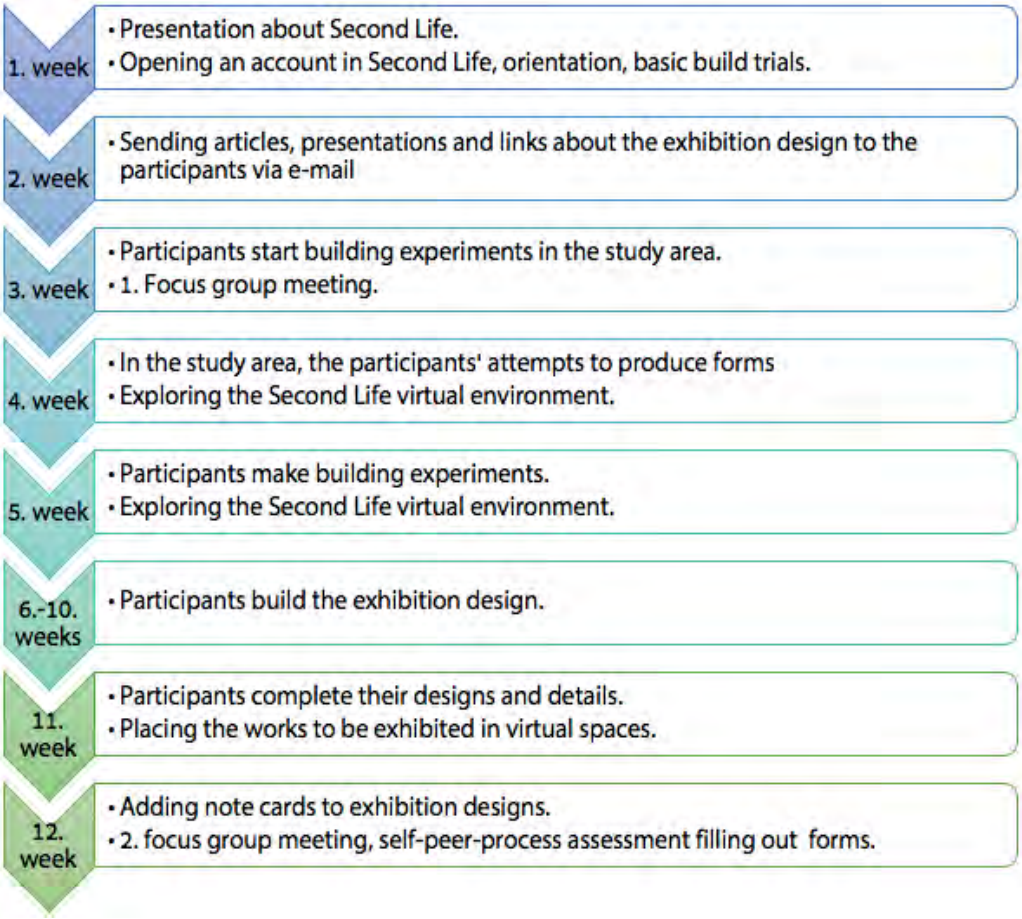

Figure 6. Research process

Focus Group Meeting

Focus group interviews were held at the beginning and end of the implementation process, and the opinions of the participants about their knowledge and usage skills were tried to be determined. The resources used in the preparation of the interview questions include the articles scanned in the field indexes and the books written on measurement-assessment. Focus group interview forms (see Appendix A) have been prepared in line with the opinions of academicians who are specialized in both art and design and qualitative research methods. The questions were kept as short as possible and expressions that could be interpreted in the same way were preferred by each participant. Alternative questions and probes were used to make the questions easier to understand.

Document Review

While examining the process in this study, the records of three different Whatsapp group interviews and individual Whatsapp conversations when necessary, SL chat diary records, text messages and e-mails were evaluated within the scope of document analysis. The researcher provided motivation and technical support to participants about four hours a day for eight weeks on the use of the Second Life application. Since the researcher conducted this research on SL, which is an online, 3D environment, the research period was recorded with a data set consisting of more than 600 screenshots, 161 pages of SL chat records (raw data), 87 pages of Whatsapp chat records (raw data).

Self-peer-Process Assesment

In order for the participants to reflect their views on performance tasks in the creative design process, to determine how much they understand the concepts related to the subject, to what extent they can use the Second Life virtual environment and to determine their attitudes towards virtual worlds "Self Assessment Form" (see Appendix B), "Peer Assessment Form" (see Appendix C) and "Student's Process Assessment Form" (see Appendix D) were used. While creating these tools used the resources include the articles scanned in the field indexes and the books written on measurement-assessment. Also the opinions of academicians specialized in both the field of art and design and qualitative research methods, and these questions compliance with the sub-objectives were taken into account in this progress. These forms were filled in by the participants at the end of the research process.

Analysis of Data

In the study, the analysis of qualitative data collected through focus group interview, self-peer-process assessment and document analysis was conducted with content analysis technique. The main purpose of content analysis is to reach the concepts, themes and relationships that can explain the collected data. Researchers identify and analyze the existence, meanings, and relationships of these themes and concepts. Then the researchers make inferences about the messages in the data (Buyukozturk et all, 2019).

In this context, the researcher determined 33 main themes (main categories) based on 33 codes by reading the data set several times at different times in line with the aims of the research. Then, besides the researcher, three academicians who are experts in the field of art and design examined the codes and main themes. As a result of this examination, expert academicians determined 21 main themes and 45 sub-themes based on 28 codes. Disagreements on the codes and main themes were resolved with consensus after expert academicians exchanged views. Thus, the code and main themes list to be used in the analysis were reached by arranging the codes and main themes. In conclusion, this article, which includes students' opinions on the use of Second Life application in art and design courses, includes 9 main themes and 25 sub-themes based on 17 codes.

Providing detailed definitions is one of the most important solutions proposed to eliminate threats to reliability and increase validity and quality in qualitative research. Therefore, the level of validity and credibility for qualitative research; almost all of the data collection and analysis processes depend on the elements that threaten the validity and the techniques applied to eliminate these threats to be written in the research report in an open and systematic manner. Including everything in the research process in the research report in a clear and traceable manner increases the credibility and therefore the quality of the research (Hammersley, 1987; LeCompte & Goetz, 1982; Pyett, 2003; Rubin & Rubin, 1995; Whittemore et al. 2001 as cited in Yasar, 2018). In order to ensure external reliability, the research should be reported transparently, the participants and other data sources should be clearly stated (Connelly, 2016 as cited in Baltaci, 2019). In this study, in the method part of the research, in order to ensure the external validity of the research; the method used in the data collection process, the tools developed, the participants and the implementation process are explained in detail. In addition, the obtained findings were presented in an original way, with direct quotations, without adding comments, and then the researcher's comments were included.

Perhaps the most known and applied strategy for increasing the internal validity and reliability of a study is the triangulation technique. Triangulation, which is also defined as variation, is one of the techniques that increase the consistency, understandability and timeliness of the results, thus increasing the credibility of the

research (Yasar, 2018). In this study, the researcher diversified the data collection process and gathered detailed and in-depth information through focus group interviews, self-process reviews, and document analysis.

Asking people who have general knowledge about the research subject and who are specialized in qualitative research methods to examine the research in various dimensions is another measure that can be taken in terms of credibility (Baskale, 2016) In order to analyze and interpret the research data in terms of validity and reliability of the research, three educators who are experts in the field of art and design and an measurement-assessment specialist's opinion was sought. Thus, it was possible to evaluate the data from different angles.

Long-term interaction with the participants increases the reliability of the research results. This includes the fact that the researcher devotes sufficient time to the data collection process to gain an in-depth understanding of the culture, language or views of the group under study. Sustained involvement, also helps build the trusting relationships and rapport that are necessary to elicit accurate and thorough responses (Houser, 2016). In order to ensure the internal validity of the research, the researcher participated in the research field and had a long-term interaction for 12 weeks. The abbreviation system specified in the table below was used in the analysis of all qualitative data obtained in the study.

Table 1. Management of qualitative data set

Expression	Expansion of expression
FG Interview Record 2,11th stud /Ln 25	Focus Group Interview Record 2, 11th student/ Line number 25).
PA, 16th stud /Ln 13	Peer Assessment, 16th student /Line number 13
SA, 9th stud /Ln 53	Self Assesment, 9th student /Line number 53
PrA, 7th stud /Ln 64	Process Assessment, 7th student /Line number 64
SLdiary, 8th stud /Ln 450	Second Life Chat Diary, 8th student /Line number 450
WPdiary, 14th stud /Ln 25	Whatsapp Chat Diary, 14th student /Line number 25

FINDINGS

Student views on the use of SL application in higher education art and design education are grouped under three main themes. These are 1) Students 'views on the use of the Second Life application in art and design education, 2) Students' views on the designs obtained through the use of the Second Life application, 3) The impact of the Second Life application on the learning process. Main themes are given in the Figure 7.

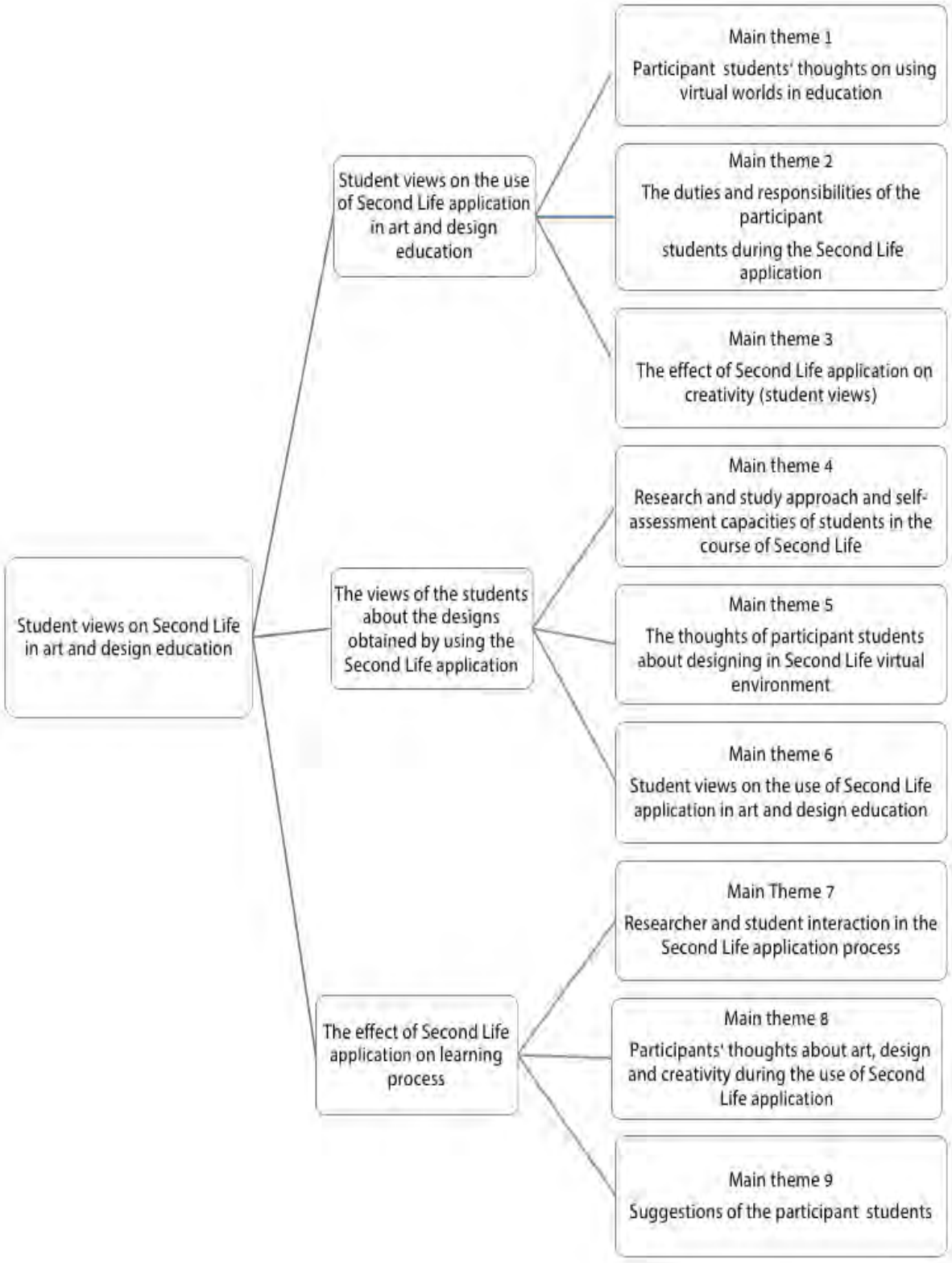

Figure 7. Overview of student views on Second Life application in art and design education

Findings about 1st Research Question

The first question of the research is "What are the students' views on the use of the Second Life application in arts education?" expressed in the form. The views of the participants to answer this question were collected under three main themes. These are; 1) Participant students 'thoughts on the use of virtual worlds in

education, 2) The duties and responsibilities of the participant students during the Second Life application, 3) The effect of Second Life application on creativity (according to the students' views). Figure 8 shows the themes and sub-themes of student views on the use of the Second Life application in art and design education".

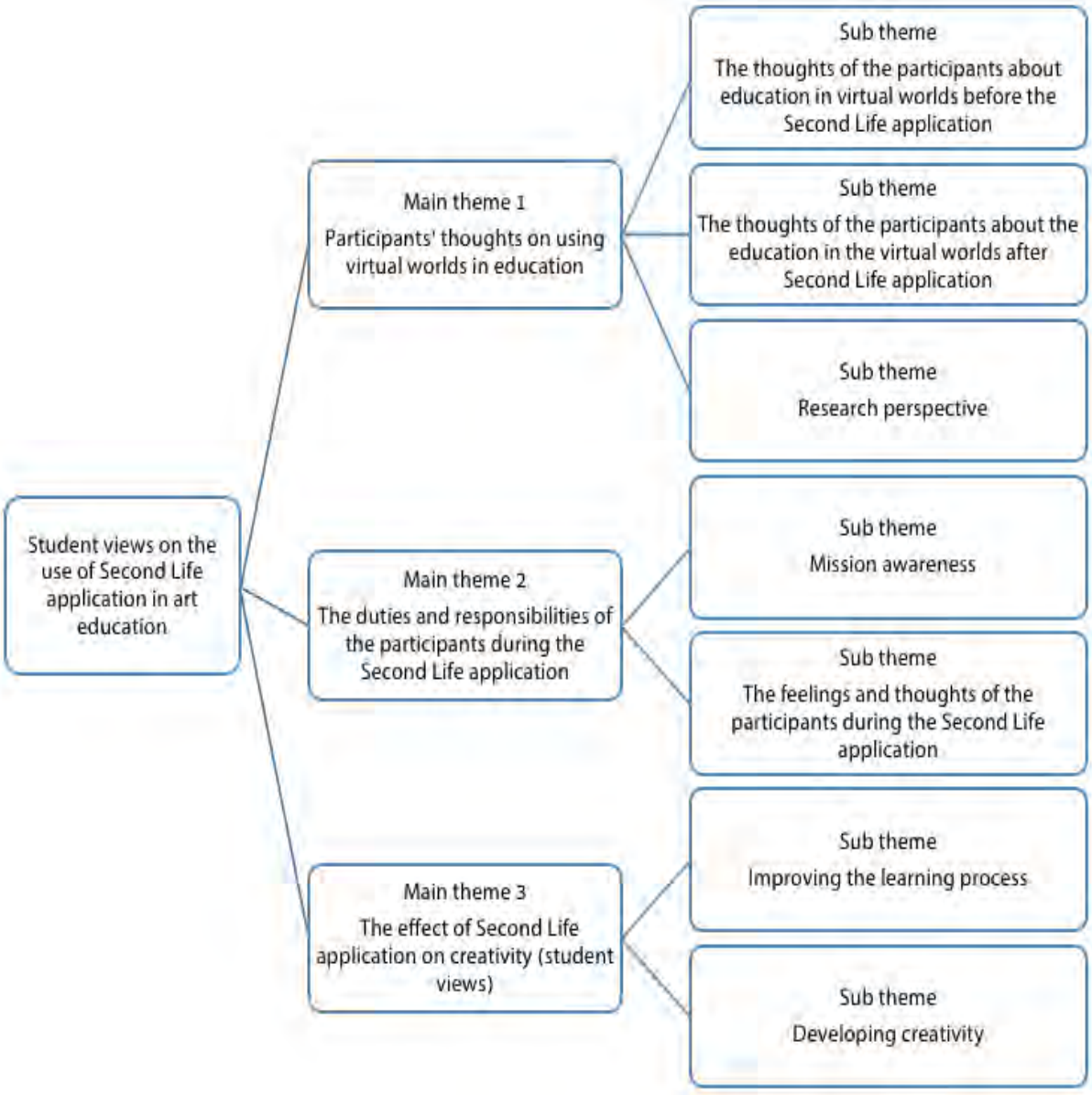

Figure 8. Overview of students' views on the use of Second Life application in arts education

1st main theme; when the data about "The opinions of the participant on using virtual worlds in education" are examined; Three sub-themes have emerged. Before using the SL application, the participants (f:2) stated that they used virtual environments for visual search, examining examples and distance education. These expressions contain both positive and negative meanings.

> *"…… .. I'm more interested in web sites because I am more interested in images."* (FG Interview Record 1, 11th stud/Ln 77-81).
>
> *"We had distance education lessons in our first year …… and I don't think it worked .."* (FG Interview Record 1, 8th stud/Ln 152-154).

After using the SL application, the participants (f:5) stated that they wanted to do more practice about art and design education and SL enabled this.

"…. I think it is definitely beneficial to use such programs actively… Instead of just taking technical knowledge and making experiments, I think that when we try it in a virtual environment, it is easier and we can bring about more work. " (FG Interview Record 2, 8th stud/ Ln 71-78).

Although the perspectives of the participants before their voluntary participation in the study are mostly positive (f:6), negative (f:2) statements can also be seen. Examples of the findings are given below.

If we understand V…'s words correctly, I think that we will do a good job and it becomes much clearer when we talk together (WPdiary, 8th stud/Ln 31-33).

"372 mb internet is gone, I played for 15 minutes or so" (WPdiary. The student who has not completed the research /Ln 2069-2073).

Most of the participants did not design in online, 3D virtual environments prior to the research. They stated that they generally use virtual environments for research. Some of them used virtual environments for distance education and had negative results. Participants stated that they found a environment to practice in the field of art after the SL application. Most of the participants were positively impressed by this design experience in SL.

2nd main theme; when the data about the "Roles and responsibilities of participating students during SL application" were examined, 171 opinions were obtained. Findings participants' sense of duty; (f:99) and participants' feelings and thoughts (f:62) during SL application. One of the opinions of the participants is given below.

"We solved it by examining a little program. He told the one who could not solve it a little… The moment you say we are gathering friends, we feel responsible and go there. We are starting to work… I think it is useful in this respect too. " (FG Interview Record 2, 8th stud/ Ln 125-131).

When the findings are examined, it can be said that the participants behaved very responsibly in completing the assigned tasks, informing the researcher and helping each other during 12 weeks. At the end of the research process, 16 of the 17 students who started the research completed the exhibition design construction.

"The feelings and thoughts of the participants during SL application" were examined under two headings as positive (f:45) and negative (f:17). Some of the emotions that the participants felt during the study and some of the thoughts that developed accordingly are as follows:

"I think putting out a job is great. For the first time, I have created something of my own in the virtual world, and it made me very happy. " (FG Interview Record 2,15th stud/ Ln 509-511).

"It drew my interest, but I didn't think it would force me that much. But it was a different challenge for me. It was a different experience. " (SA. 12th stud/ Ln 105-107).

When the findings are examined, it is seen that positive expressions are much more than negative statements. It is striking that negative opinions were stated at the beginning of the study. This situation points to the difficulties experienced in learning the program at the beginning.

3rd main theme; when the data about the "Effect of SL application on creativity" are examined; it is seen that the participants defined SL as a creative environment (f:13). At the same time, they stated that they encountered many creativity elements in many virtual environments and these elements were generally art and design products.

"… .. they have done it officially, places where a great deal, extensive and much effort has been spent .." (SLdiary, 11th stud/ Ln 1161-1180).

"I'll give Second Life as an example again. I think it was again a very creative environment that I did not expect. So it's the first time I've met. And it was a creative environment for me. " (FG Interview Record 1, 8th stud/Ln 382-384).

85 opinions were reported about SL application improving the learning process (f:52) and improving creativity (f:33).

"His feedback in my strengths and weaknesses provided suggestions and contributions for permanent learning." (PA, 16th stud/ Ln 15-16).

"It was a preliminary preparation for the 3D Max program rather than the graphic design programs I know…. I liked it very much because I experienced the power of designing and teamwork. (SA, 16th stud/ Ln 80-83).

Using expressions such as discovering, learning, 3D design, the participants mentioned the positive effect of SL on the learning process. Some of the statements of the participants about SL developing creativity are as follows;

"I think it has a very positive effect on creativity…" (FG Interview Record 1,11th stud/ Ln 218).

"There is absolutely no limitation. For one thing, there is such a thing as flying in the game. So we didn't even have to put it on the ground. I think we worked so freely …… the game made us think much more creatively in this respect. We tried to make what was not possible… it provides a very creative working environment…" (FG Interview Record 2, 8th stud/ Ln 234-241).

When the findings were examined, the participants reported many positive (f:33) and rarely negative (f:2) opinions on the improvement of creativity by SL application. In addition, the participants stated that the more they experiment, the more creative they are. The relationship between SL and creativity has been defined in many ways. There are many features in SL such as creative builds, avatars, teleport and flying. In addition, many features of SL such as allowing for social interaction, hosting works of art, and easy design have attracted the attention of the participants. For this reason, it can be said that they find SL creative.

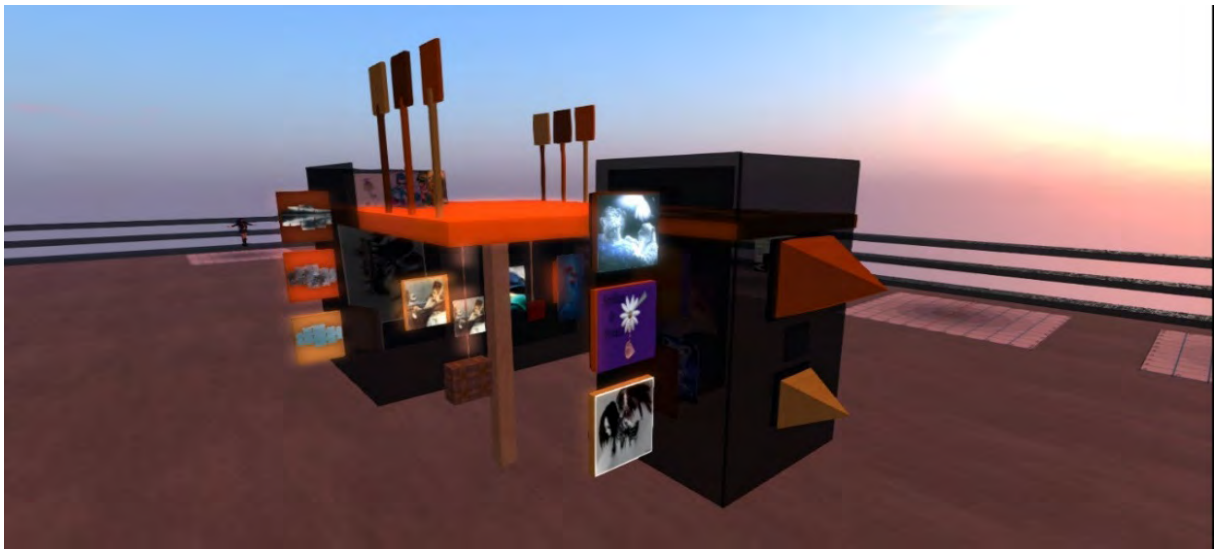

Figure 9. 15th participant's design

Findings about the 2nd Research Question

The second question of the research is **"**What are the views of the students about the works obtained in the art and design course where Second Life application is used?" expressed in the form. The views of the participants to answer this question were collected under three main themes. These; 1) Research and study approach and self-assessment capacities of students in the course process carried out by using the SL application, 2) Participants' thoughts about designing in Second Life virtual environment, 3) It is in the form of student views on the possibilities of use of Second Life application in art and design education. In Figure 10, the main theme and sub-themes for the "opinions of students on designs obtained by using the Second Life application " are shown.

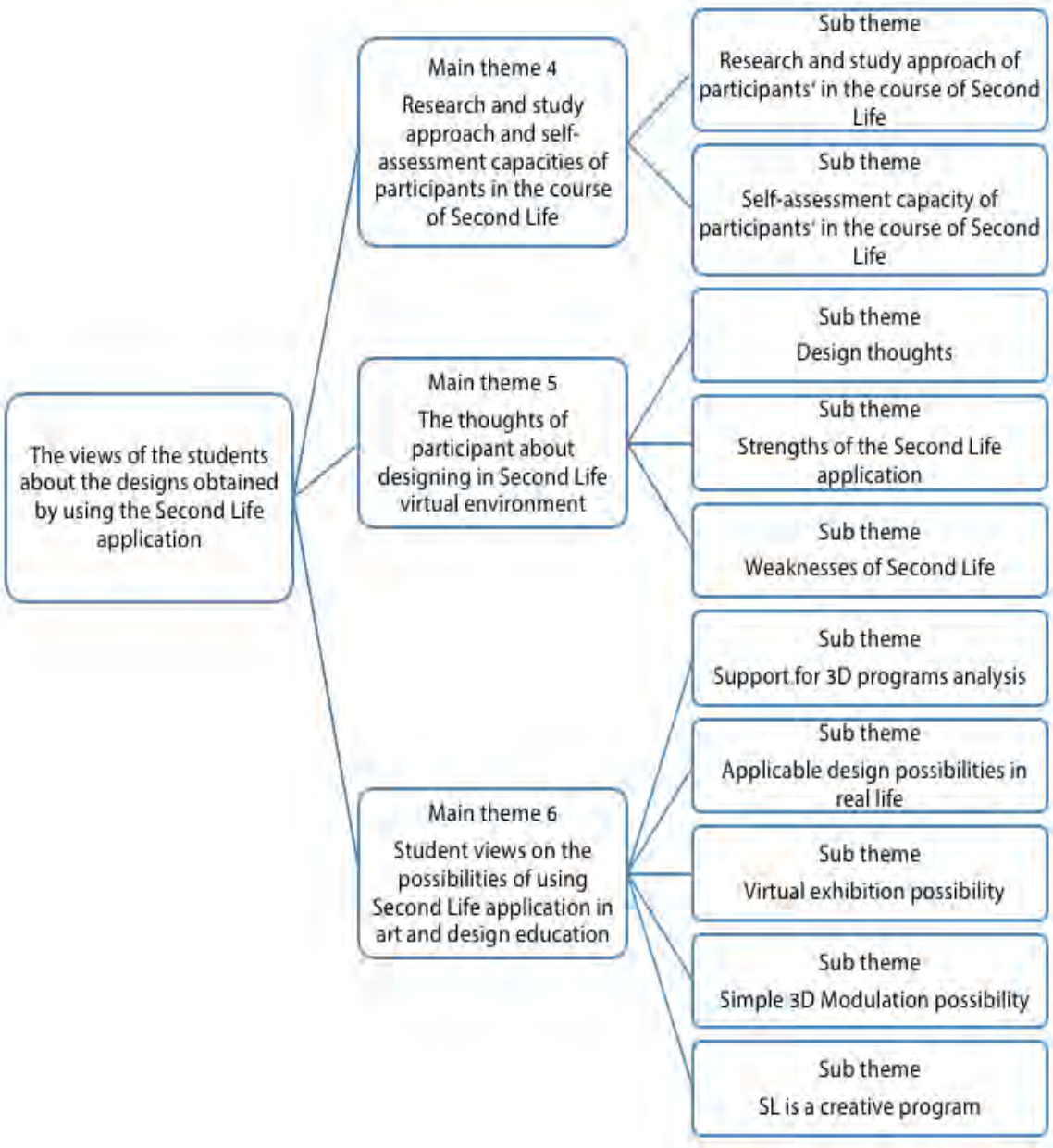

Figure 10. Students' views on the designs obtained through the use of the Second Life application

4th main theme; when the data about "Research and study approach and self-assesment capacities of students in the course process carried out by using the Second Life application " are examined; It was seen that 125 opinions were expressed. The researchs of the participants during the SL application in order to learn the technical part of the application and to generate an idea about the exhibition design are as follows; conducting internet research, planning the design, benefiting from the information e-mails sent by the researcher, using the trial and error method and transferring the information by the researcher. Some of the findings about the "research and study approach of the participants" (f:52) are as follows:

"I am thinking of reviewing what you posted today. I will spend time revealing the design" (WPdiary, 7th stud/ Ln 3098-3099).

"I am experimenting ……" (SLdiary, 10th stud/ Ln 3040).

"… I did a lot of research." (SA, 16th stud/ Ln 224).

The self-assessment capacities of the students in the lesson process conducted by using the Second Life application were analyzed under four headings by analyzing the participants' expressions (f:73) about their self-assessment. These; 1) Criticism, 2) Liking, 3) Worry, 4) Gaps. Some of the findings are as follows:

"Because it has a design related to the content of my artistic work …… I put forward a social issue, so the value of my work is high for me." (SA, 8th stud/ Ln 45-47).

"I have to think more about the interior design of the space." (SA, 13th stud/ Ln 654).

During the research process, the participants displayed an attitude that could self-assesment, like their own designs, and be aware of the shortcomings in their designs. Participants rarely worried about their work (f:2). When the findings are examined, some of the participants stated that they needed more time and a larger workspace to complete the design. Some of the participants pointed out that they should work harder and selflessly, be more creative, and learn the program better.

5. main theme; when the data about "Participants' thoughts about designing in Second Life virtual environment" are examined; 59 opinions were determined and evaluated under three headings. 1) Ideas about designing, 2) Strengths of Second Life application, 3) Weaknesses of Second Life application. Some of the opinions of the participants about "Designing" (f:14) are given below.

At the beginning of the application;

"It's very complicated indeed. It's a bit overwhelming." (WPdiary, 14th stud/ Ln 1942-1943).

When the application progresses;

"… It was a bit difficult for me, but as things go I thought it might get easier." (FG Interview Record 1, 15th stud/Ln 311-312).

When the findings were examined, participants had difficulties at the beginning of the implementation process and reflected this on their discourse. When the process progressed and the learning about the construction part of the program took place, the participants expressed more positive opinions. Reasons for participants' positive thoughts about SL application; It is stated that SL is useful, functional and easy, allows 3D design and display opportunities.

Statements of the participants on "Strengths of the Second Life application" (f:23) were classified under the following headings. 1) Improving 3D thinking, 2) Free and creative environment, 3) Easy and useful, 4) Improving perspective, 5) Unlimited examples, 6) Helping language learning. When the findings were examined, it was seen that the most expressed strength of the Second Life application was "improving 3D thinking" (f:11). Since the participants had the chance to make 3D designs, they defined SL as a preliminary preparation for 3D programs. Some of the statements of the participants are listed below.

"When I start to learn the 3D Max program in the future, I think it may help me." (SA, 13th stud/ Ln 549-550).

"I think he has developed three dimensional thinking a lot ..." (FG Interview Record 2, 12th stud/ Ln 411).

"Creating a free environment and giving us the opportunity to design." (PA, 9th stud/ Ln 109).

"The interface is easy and useful." (PA, 15th stud/ Ln 69).

Some of the participants stated that thanks to the SL application, their perspective improved, they could find many examples about art and desing and they could practice language learning. Some participants have stated on several occasions that SL is an extremely free environment. Participants have discovered the strengths of SL.

Six titles related to the sub-theme "Weaknesses of the Second Life application" (f:73) were revealed. These; 1) Difficulty of the program, not being used to the interface, 2) Shortcuts, insufficient use of the mouse, simplicity of the program, 3) Saving, loading problems (build), 4) Avatar density, 5) Internet connection problems, technical problems, 6) Land problem (for building), 7) Inability to be creative. Some of the statements of the participants are as follows.

"*Yes we were not used to this interface. Because we were used to different programs. I guess we just had her trouble. "* (FG Interview Record 2, 8th stud/ Ln 421-422).

"The program is hard to understand." (PA, 1st stud/ Ln 129).

"The key combinations I used while designing in the application made me a bit bored." (PA, 11th stud/ Ln 170-171).

Participants mostly stated that the program was difficult and they were not used to the interface and defined this as the weakness of the SL application. When the findings about the weaknesses of the SL application are examined, other issues that are mostly emphasized are technical issues such as shortcuts, inadequate mouse use, and simplicity of the program. Participants defined situations such as key combinations and program difficulty as weaknesses.

> *"…… Now I am connecting 3 objects but this time I cannot tie it to the ground, the same warning comes. Now, it does not connect with other parts, but it does not connect to the big part."* (SLdiary, 14th stud/ Ln 3881-3898).

"I'm at a deadlock in creativity…" (SA, 3rd stud/ Ln 277).

"… Yesterday was over, I looked not now, this aspect of the game is very bad.. (WPdiary, 16th stud/Ln 3989-3990).

> *"I did some of the practice in Maya. Having many people online at the same time in SL slowed me down. This is a big drawback."* (PA, 5th stud/ Ln 121-122).

Problems such as saving, loading problems, avatar density, internet connection that occur during the practise of the SL application are defined as the problems most frequently encountered by the participants. Technical problems constitute a large part of the weaknesses of SL. When the technical problems are eliminated, it is seen that the only problem to be experienced in SL is the imagination of the participant.

6. main theme; the data (f:14) regarding "Student views on the possibilities of using Second Life application in art and design education" were evaluated under five headings. These; 1) Support for 3D programs analysis, 2) Design possibilities applicable in real life, 3) Virtual exhibition, 4) Simple 3D modeling opportunity, 5) A creative program. Some of the findings are given below.

> *"I can create my own exhibition."* (SA, 15th stud/ Ln 544).
>
> *"Too many I can't count. If I need to give the clearest example, since my department is graphic design, it is the highest level of creativity for the 3d Max program and other designs I will do. "* (SA, 16th stud/ Ln 523-525).

Some of the participants (f:4) think that SL will provide ease of analyzing more complex 3D design programs.

> *"I can apply what I applied in this study in real life."* (SA, 5th stud/ Ln 533).

The designs obtained as a result of the practise of Second Life application were defined as applicable in the real world by some participants (f:4). Participants stated that it is very costly to open an exhibition or make a 3D modeling in real life, SL eliminated the high cost problem and this situation provided an advantage for the users. Participants also noted that they often encountered complex and difficult 3D modeling programs. When they experienced the SL's modeling tool, they noted that 3D design was easier. They stated that 3D modeling on SL was an advantage for them before using other programs such as 3D Max and Maya.

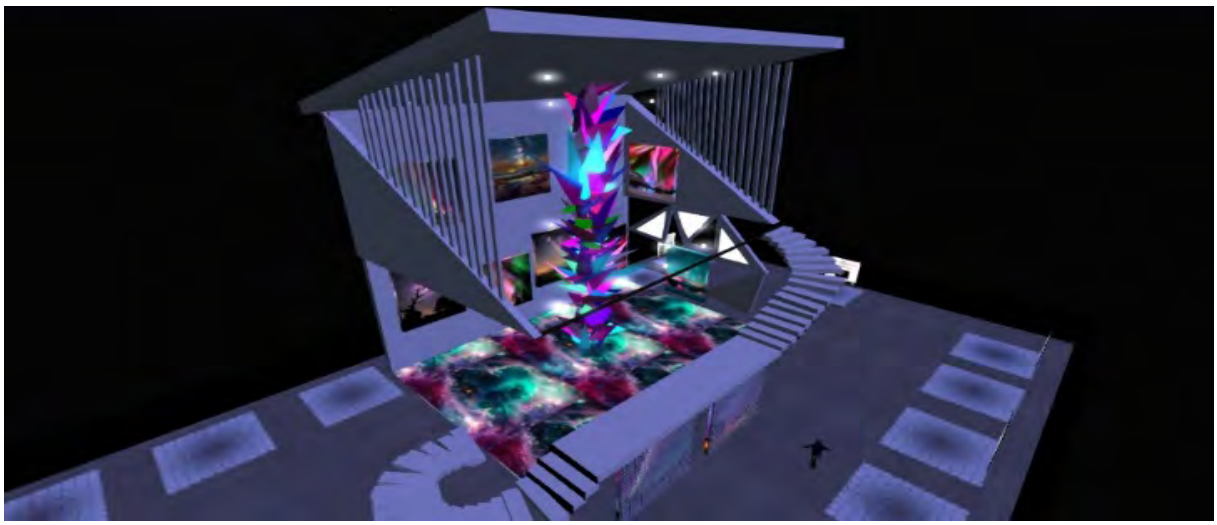

Figure 11. 13th participant's design

Figure 12. 9th participant's design

Findings Regarding the 3rd Research Question

3rd Question of the research is expressed in the form as "How does the Second Life application affect the learning process in art and design education?"

The data regarding the "Effect of Second Life application on the learning process" were analyzed under three main themes. 1) Interactions between researchers and participants in the Second Life application process, 2) Participants 'thoughts on art, design and creativity in the practise process of the Second Life application, 3) Participants' suggestions. In Figure 13, the main theme and sub-themes related to the "Effect of Second Life application on the learning process" are included.

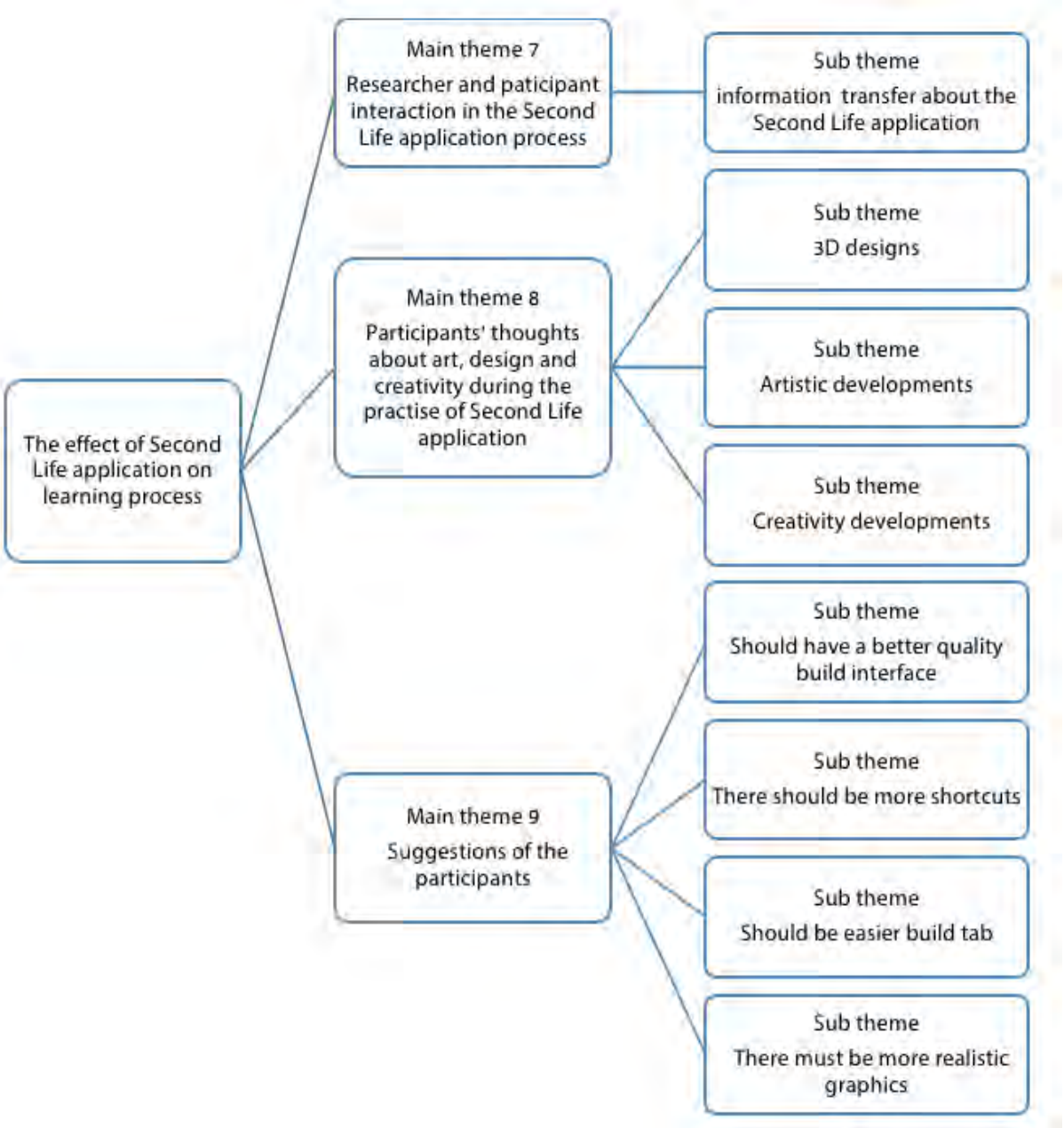

Figure 13. The effect of Second Life application on the learning process

7th main theme; "Interactions between researchers and participants in the Second Life application process", 1) Information transfer about the Second Life application was examined as a sub-theme. This sub-theme includes the information transfer of the researcher about the general structure of SL (f:53), the subjects related to design-construction (f:219) and the questions of the participants (f:119). Below is an example of "Second Life general information transfer".

> *"When you first enter the game, you land on an orientation island. Some basic information is given there. Find out about them. Then paste this into the address link http://maps.secondlife.com/secondlife/Pandorus/126/108/3400. This is the area you will build.* " (WPdiary, Researcher/ Ln 211-222).

The researcher tried to answer the questions of the participants after the "general information transfer about design-building in Second Life application " was done with basic construction lessons. In the later stages of the research, information was transferred among the participants. The transfer of information for design-building is about understanding SL's construction program and solving the technical problems that arise, and is the most talked (f:219) topic during the research. Below is an example of information transfer for design-build.

"If you want to add accessories to your buildings, teleport to a Furniture Shop. There is an island that sells a lot of stuff in SL. You can type your search in the address bar and go to the markets. You can buy accessories using the Linden dollars I sent you. The accessories you receive are registered in your inventory. You can come to the area we rebuilt and add accessories to your building. After your design is completed, we will add a note card to your work. " (WPdiary. Researcher/ Ln 851-858).

When the findings are examined, it can be seen that the researcher transfers information about the workspace, construction (linking objects, disconnecting, selecting, saving, naming, deleting, script language-scheduling, note cards, shortcuts, scripts), inventory, design issues. The most intense phase of the SL application process is the part where the participants try to learn the program. Therefore, the researcher transferred often information to participants.

Participants asked the researcher and each other questions about SL again and tried to solve the system. Participant questions about SL application; The application process of the research is related to the field of study, design, construction, adding and removing to the inventory, questions about e-mails, making money, shopping. Some of the findings are as follows.

"I think we can import models from Sketchup. Can I use it here? " (SLdiary, 9th stud/ Ln 1558-1559).

"Made it in the video, spiral. How are we doing it? " (SLdiary, 7th stud/ Ln 2658-2660).

Most of the questions directed by the participants to the researcher or to each other are about construction. As I mentioned earlier, this part was challenging. After the construction phase of SL is learned by the participants, the process progressed very quickly and easy.

8th main theme**;** "Participants' thoughts about art, design and creativity during the practise of Second Life application" (initially, during the process and at the end of their own designs) are evaluated within three sub-themes. These; 1) 3D designs, 2) Artistic developments, 3) Creativity developments. Some of the findings are as follows:

"I think I learned how to think when designing a space, how to design something in a virtual environment, what the basic intellectual structure of 3D modeling is." (SA, 11th stud/ Ln 323-325).

"I tried to think more creatively and interestingly." (SA, 3rd stud/ Ln 395).

"… .. at first you don't know, you feel as if you are constrained, but then as you master the program, you get free on the contrary… there is an endless choice." (FG Interview Record 2, 11th stud/ Ln 218-227).

Most of the participants defined the Second Life virtual environment and its design as more free and original (f:20). It is observed that the participants have mentioned that the 3D design process has improved their three-dimensional thinking and design skills (f:28). Only one of the opinions (f:15) about the effect of the application of the SL application on the artistic development of the participants is evaluated as negative. Therefore, it can be said that the application process positively affects the artistic development of the participants.

9th main theme; opinions (f:10) about the "Suggestions of the participant students about the process of using the Second Life application" are collected under four sub-themes. These; 1) There should be a better quality build interface, 2) There should be more shortcuts, 3) There should be an easier build tab, 4) There should be more realistic graphics. After the practise process of the SL application, the participants were asked to evaluate the process and share their suggestions for improving the SL application. Some of the findings are as follows:

"I would like a better quality build interface." (PA, 9th stud/ Ln 348).

"I think there is everything necessary ..." (PA, 5th stud/ Ln 299-300).

"I wish it was a little easier to use and that some products could be bought free of charge from the market." (PA, 14th stud/ Ln 328-329).

"Second Life can be used with more realistic graphics, and doing so can attract more players to the game." (PA, 7th stud/Ln 322-323).

Participants suggested that there should be a better quality build interface, more shortcuts, easier build tab, better quality graphics. The most emphasized subject of the participants is "Having an easier construction tab" (f:3). When the findings are examined, it is observed that the Second Life application is found sufficient by most of the participants and no suggestions were made.

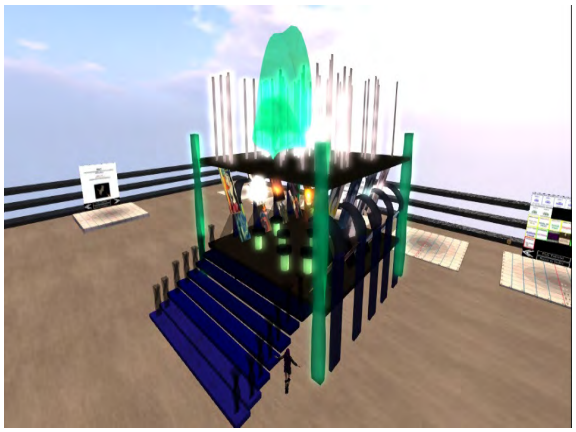

Figure 14. 7th participant's design

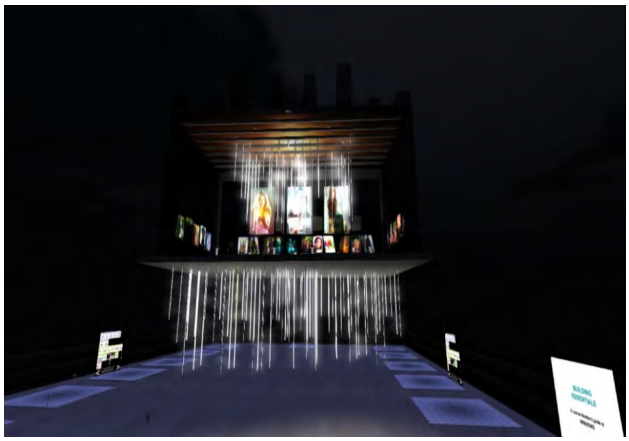

Figure 15. 11th participant's design

DISCUSSIONS

In this article, students' views on the use of SL application in higher education art and design education were examined. Below is the first question of the research purpose**,** " What are the students' views on the use of Second Life application in art and design education?" the findings obtained within the framework of the discussion were discussed.

Participants stated that they mostly used virtual worlds for visual data search, visual inspection, social media etc. before SL application, and they mentioned that they had negative experiences in distance education. After the SL application, it was observed that the participants' thoughts about education in virtual worlds changed positively. Erturk and Sahin (2019) in their study investigating experiential learning in virtual environments; they stated that the participants who thought the training in SL was negative, gave a positive opinion afterwards. This can be explained by the fact that learning Second Life initially takes time.

It was observed that the participants act very responsibly in completing the assigned tasks. Ciftci (2013, p.110) listed student duties in educational digital games as follows: "Students are aware of the goals, follows their processes, controls the processes of other players in multiplayer games, know the game goals and develops strategies accordingly, requests support from his teachers or friends when necessary, evaluate their process, repeats the current task when they cannot find their performance sufficient, terminates the process by checking whether the target has been achieved." Basen upon this thought of Ciftci, it can be said that the findings obtained from the statements of the participants during this research and the views of Ciftci (2013) coincide. 16 of the 17 participants fulfilled the exhibition design task and all their responsibilities in the implementation process.

In recent years, many experts have realized the enormous educational and motivational potential of video games and virtual worlds (Palomo-Duarte et all, 2021). Bulbul (2016) stated that the fact that three-dimensional virtual worlds are visually rich, making learning interesting, offering close to real life experience, rich communication and interaction affect student motivation. In our study, participants made similar views. For example, the participants stated that SL provides the opportunity to practice on graphic education and positively affected their application skills. Besides, using expressions such as exploring shortcuts, having fun, learning, 3D design, working to strengthen meaning, solving SL, paying attention to color harmony, composition, and being creative, the participants focused on the positive effect of the SL application on their learning processes.

With the increasing interest of educational institutions in 3D virtual worlds, it is known that researches have been made on the effects of these environments on the learning process. For example, Girvan and Savage (2019) argued that Second Life and other virtual worlds support the constructivist learning approach with the opportunity to learn by doing and experiencing. Erbas and Demirer (2015) state that virtual reality technology can maximize students' learning by interacting with artificially created virtual environments, and students can learn by doing and experiencing. Participants were able to learn many things by doing and

experiencing during the Second Life application process. With the SL application, participants were able to manage their own learning processes both with the object and content they have created and interacting with other participants.

According to Niemi et al. (2014), students can produce content and consume content in digital environments. Therefore, students need the skills of working, creating, discussing in virtual environments and developing ethical behavior. In this research, participants demonstrated a range of work, discussion, and creative skills throughout the process. In addition, they produced content in the Second Life environment and used ready-made productions. What has been done in this research process overlaps with Niemi's discourses. Davis, Phillips and Kulm (2018) define digital education environments as platforms that offer unique opportunities for creative and transformative experiences to students of all ages. Participants also have a similar view and state that the SL application improves creativity and SL's own structure is free and creative. In addition, the Technology Society in International Education (2016) student standards for the "Creative Communicator" focus area states: "Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals." In this study, it was observed that the participants behave in accordance with ISTE standards, and in the light of these information and findings, it suggests that the using of the SL application has a positive effect on the learning process and creativity.

Below is the second question of the research purpose, "What are the views of the students about the works obtained in the art and design course where Second Life application is used?" the findings obtained within the framework of the discussion were discussed.

Participants prefered some a research-study approaches, in order to learn the technical part of the application and to generate an idea about the exhibition design during the use of the SL application. Observed approaches are as follows; they conducted internet research, planned their designs, benefited from the information e-mails sent by the researcher, benefited from the information transfer made by the researcher, used the trial and error method and question-answer technique. Reisoglu and Kocak (2017) stated that the educational activities carried out on the SL platform enable e-learning, experimental learning and social interaction. Karakus Yilmaz (2017) stated that thanks to the many pedagogical elements that virtual worlds contain, students are able to learn by accessing the information they want at any time and by structuring the information that is meaningful to them. For this reason, Karakus Yilmaz defines virtual worlds as a technology where constructivist approaches are used extensively and appeals to all learning areas. In this study also, when the research-study approaches of the participants were examined, it was seen that they could access information in many ways and transform the information in line with their own purposes.

Regarding the participants' opinions about designing in SL virtual environment; as in every new learning, the technical skill and application part of the SL application was initially defined as difficult by the participants, and this situation changed positively in the later times. Han (2016) argued that while learning in virtual worlds, the learning process takes place with the senses and is based on experiences. Researcher stated that the learning experiences experienced in virtual environments are as real as the learning experience living in the physical world. As a result of the use of the SL application, the participants made a self-assessment and talked about their opinions including criticism, appreciation, concern and deficiencies. When the findings were examined, the participants stated that they worked hard and devotedly but they could not use time effectively, they needed a wider study area for practice, they needed to learn the program better and they needed to produce more creative products.

Participants noted the strengths of the SL application; they defined it as developing 3D thinking, free and creative environment, easy and useful, developing perspective, having unlimited examples, helping language learning. Reisoglu and Goktas (2017) on how SL can develop 3D thinking; they stated that drawing on the blackboard or notebook, clicking on the computer or tablet screen, and watching the two or three dimensional visuals brought by the teacher are no longer sufficient for the students. They argued that 3D virtual environments can be effective in developing spatial skills, especially in lessons that require students to think three-dimensionally such as mathematics and geometry. In this study also, as a result of the interviews, the participants frequently stated that virtual environments improved the ability to think in three dimensions.

On the subject of SL being a free and creative environment, Ball and Pears (2009) gave a very simple example

of the relationship between virtual environments and creativity and stated that the fact that the avatar design can be shaped according to the user's own wishes allows the players to develop their perspectives and creativity by thinking on the design. Depending on the limits of their imagination, users can create various objects in the 3D virtual environment, make changes on the objects, and dive into a world created with imagination (Tokel & Topu, 2017). This research is based on design. Participants focused more on being creative while making their designs. Throughout the research, it was observed that SL provides various opportunities for creativity. The views of the aforementioned researchers overlap with our findings.

Virtual reality-based educational platforms have the ability to provide students and teachers with a wide range of training procedures and are used in many challenging areas (Grivokostopoulou et all, 2020). Regarding the ease and convenience of SL; Erbas and Demirer (2015) stated that the use of three-dimensional environments is easier than two-dimensional options and that three-dimensional virtual worlds can be used for education with these features. While virtual learning environments give the user the opportunity to gain experience in subjects that cannot be reached in the real world, they provide a better concretization of abstract concepts. In this study, most of the participants found SL easier and more useful than other three-dimensional modeling programs. The discourses of these researchers overlap with the discourses of the participants.

The weaknesses of the Second Life application has been defined by the participants as difficulty of the program, unfamiliarity with the interface, shortcuts, inadequate mouse use, simplicity of the program, save-loading problems, avatar density, internet connection and technical problems, plot problem (for construction), and the problems with creativity. These problems are not related to the method but rather the technical part and are individual. For example, a participant with a strong internet connection does not show the internet connection as a weakness or a participant student who has received the necessary information about saving and uploading will not encounter this problem. Apart from the avatar density and the plot problem (for building), the situations defined as weaknesses are individual and stem from technical competence. The weaknesses of SL encountered in this study overlap with the findings of the study of Coban, Kalkan and Hinislioglu (2017). During the use of SL, many problems may arise due to the features of the program. For example, connecting many students to the game at the same time puts a lot of load on the server. Some universities have blocked SL for this reason. In this research, the participants encountered many problems caused by SL or the internet. Some of the difficulties and limitations encountered in 3D virtual worlds in Tokel and Topu's (2017) research named "3D virtual worlds and their usage areas" are listed as follows.

- Usability and accessibility issues in interface and environment control.
- Problems arising from lack of computer skills and orientation skills.
- Cognitive load due to the limited representation of reality.
- Problems experienced due to technical insufficiency. In our study, the participants stated that they faced similar problems.

Digital games; it is one of the educational tools that can be used in many areas from problem solving to the development of creativity, from real-life simulations to teaching (Gelibolu, 2013). Second Life is also a digital game (MMORPG -Massive Multiplayer Online Role Play Game). Students' views on the possibilities of using Second Life application in art and design education; it provides support for the analysis of 3D programs, provides real-life design possibilities, provides virtual exhibition, offers simple 3D modeling and the program is creative. SL includes a simple building tool. Therefore, the participants think that they have benefited from simple modeling and say that they have entered professional 3D programs. According to the findings; features such as the ability to build into the air and the sea in SL, the creative rich visuals created by the users, the ability to create simulations, easy teleportation between location, the possibility to build in designated areas and the transfer of designs prepared, make SL functional than other software such as Maya, 3D Max.

Below is the third question of the research purpose, "How does the Second Life application affect the learning process in art and design education?" the findings obtained within the framework of the discussion were discussed.

Within the scope of researcher and student interaction in the SL application process; the researcher transfered information about working area, build (linking objects, disconnecting, selecting, saving, naming, deleting, scripting language-scheduling, adding scripts, note cards, shortcuts) and inventory. Both general and design-building information transfer is the most important and longest stage of the SL application process. Becouse,

most of the participants made 3D construction trials in SL for the first time, and they spent a long time to achieve this. Yilmaz (2017) stated that student-teacher interaction is the most used type of interaction. Because researcher states that the teacher is an important source of support for the students by directing and communicating with them, as well as the transfer of content. In the learning process, the teacher defines the responsiveness of the students to the messages, showing a positive attitude and valuing them as important points in the teacher-student interaction. In this study, the researcher interacted with the participants throughout the whole process and undertook the task of conveying information.

Participants' thoughts on art, design and creativity during the SL implementation process; 3D designs were evaluated in terms of artistic development and creativity development. Participants stated that the design process developed spontaneously and that they made an effort to be more artistic while making their designs. Participants said that SL is free-original, they learned SL through trial and error, and as a result, they were able to design in their minds, and that SL contributed to their creativity. Erbas and Demirer (2015) state that virtual environments offer potentially freer opportunities than real environments. Researchers stated that the users do not have any problems in freely navigating virtual environments, observing the environment and interacting with their environment. For example, some 3D virtual environments may offer opportunities such as teleportation, while some virtual environments allow users to switch between characters or use non-human characters. In addition, individuals do not encounter physical obstacles during these activities while participating in activities as in real life. Bulbul (2016) Learning-teaching activities in SL; stated that it gives positive results in triggering the creative power of students, strengthening cooperation, developing virtual literacy and communication skills, participatory learning and learning the features of digital culture. The views of the participants overlap with these statements.

Participants' suggestions after the application process of the SL implementation; it should have a better quality build interface, more shortcuts, an easier build tab, more realistic graphics. When the participants have difficulty in making three-dimensional designs, they think that this is due to the construction tab of SL. Therefore, they suggested that there should be a better quality construction interface. However, 3D virtual worlds offer a rich graphical interface where audiovisual elements and contents (video, sound, graphics, text-based information, web content, etc.) supported by 3D objects can be integrated (Warburton, 2009 as cited in Tokel & Topu, 2017). Therefore, students need help to learn the main skills in SL (Wagner & Ip, 2009).

CONCLUSION

This case study tried to determine the students' opininons related to the use of Second Life application in higher education art and design education. In this regard it provides description of the attributes of Second Life and its role in higher education. This case study, conducted with 17 participants, on the use of the SL application in art and design education, focused on the participants' perception of the tool and its effect on the learning process.

In the context of the 1st research question, it was observed that after the SL application, the participants' thoughts about education in virtual worlds changed positively and this environment improved their application skills. It has been observed that the participants behave very responsibly in completing the given tasks and SL has a positive effect on the learning process. Most participants consider the SL application to enhance creativity. Therefore, the use of the SL application has a positive effect on the learning process and creativity.

In the context of the 2nd research question, the participants as a research-study approach; they used trial and error method and question-answer technique frequently. Therefore, the learning situation of the student took place in this research. It has been observed that the most expressed strength of the SL application is that it "develops 3D thinking and design skills". Therefore, it can be said that the strongest aspect of the SL application is that it improves the 3D thinking style. In addition, Second Life's strenghts are showns as: SL is an easy and useful program, SL improves its perspective, SL is a free and creative environment, SL has unlimited examples, SL helps to learn languages. Therefore, these qualities can be developed with the SL implementation. The weaknesses of the SL application; difficulty of the program, not being used to the interface, shortcuts, insufficient use of the mouse, simplification of the program, save-loading problems, avatar density, internet connection problems and technical problems, plot problem (for build). There have

been many technical problems during the use of the SL application. These problems are thought to be possible problems that will be faced by participants who are trying to solve a new program and make a three-dimensional design in this program. The SL application provides support for the analysis of 3D design programs, provides real-life design possibilities, and provides opportunities such as virtual exhibition. Therefore, it can be said that the use of the SL application will contribute to art and design education students.

In the context of the 3rd research question, the participant-researcher interaction is generally about construction. This situation reveals that learning how to construct with the SL application is the most challenging part. After the application process of the SL application, the participants suggested that there should be a better quality construction interface, there should be more shortcuts, an easier construction tab, and more realistic graphics.

According to the researcher's evaluations;

This research initially contained many challenges for both the researcher and the participants. Because both the participants were learning a new program and the researcher had to provide continuous technical and motivational support. Once the program was learned, the process became easier for both sides. The researcher did not need to provide support as most students solved technical problems and focused solely on the quality of their design. The researcher's guidance was very important in this research.

While the participants had negative thoughts about Second Life when they were included in this research, they were more positive about the research after learning about the program. Many participants stated that they need more time to complete their 3D designs. Participants stated that the best part of the SL process was the development of 3D thinking skills. All participants encountered Second Life for the first time and were generally described with positive statements such as creative, free, engaging, easy to use. The negativities of the students were related to technical problems. Participants were highly skilled in creating 3D designs. Most of the students completed their work with great devotion. Participants stated that they felt both creative and successful at the end of the process.

Participants from different cities contributed to this research. During the research, communication often took place in the Second Life virtual world. Information transfer and data collection was done via the internet (e-mail, Whatsapp etc.). The entire application process was carried out in virtual environment and over the internet. Therefore, it is thought that Second Life can be used as a tool for distance education.

Working with Second Life comes with financial difficulties. Participants' access to the internet and technical features of the computers are also among the difficulties of the study. In order to enable concurrent classroom education in the Second Life environment, the days and times the teacher will be online in the Second Life classroom must be determined in advance. Flexible working hours should not be used, its very difficult for the researcher to handle.

In summary, it is thought that Second Life application has a positive effect on students' opininons as a result of this research. Art and design education at university level in the SL virtual environment is considered to be a suitable environment for students. As we can see from the statements of the participants, the SL application had a positive effect on the participants despite some difficulties.

RECOMMENDATIONS AND FUTURE WORKS

Suggestions for this study are as follows;

- 3D virtual worlds can make a great contribution to the design of educational environments. As a result of this research, it has been seen and suggested that 3D, online virtual environments can be used in art and design education.
- The existence of a program that should be learned in the research and the degree of difficulty negatively affected the participants at the beginning of the study. The discourses of the participants differ at the beginning of the study (without learning the program) and at the end of the research (after the program is learned). For this reason, in studies using SL, first teaching the program and then conducting the relevant research may give healthier results.

-This research was carried out with a limited group of students studying art and design in a limited time and environment and the results obtained were evaluated within this framework. With a more comprehensive and detailed study, richer and more satisfying results can be obtained.

-Considering today's pandemic conditions and the need for social distance, Second Life virtual environment can provide various opportunities for distance learners in terms of tools, environments, educational opportunities and socialization. Thus it is recommended to investigate the effect of virtual environments on the learning of distance learners.

Authors' Note: In this article, the doctoral dissertation titled "The effect of virtual environment on creativity in art and design education (Second Life example)" prepared has been utilized.

Acknowledgements: I would like to thank my dear advisors, Prof Dr. Seniz Aksoy and Prof. Dr. Vedat Ozsoy and all participants who contributed to my research.

BIODATA and CONTACT ADDRESSES of AUTHOR

Dr. Sevda CEYLAN-DADAKOGLU is an art educator in Ankara. In 2004, she got her B.A. from Gazi University, Department of Art Teaching. In 2008, she fulfilled her M.A. at Gazi University, Institute of Educational Sciences. In 2018, she received her Ph.D. from Gazi University Institute of Educational Sciences with her research on "Art education and creativity in virtual environments". Her academic interest areas are art, art education, art and design education in virtual worlds and creativity. She has articles and presentations on these topics. Ceylan-Dadakoglu who continues her artistic work and participates in various artistic activities continues to research as an art educator in Ankara.

Sevda CEYLAN-DADAKOGLU
Ministry of National Education
Address: Cengiz Aytmatov Street Number 35, 06370, Ankara, Turkiye.
Phone: +905444398089
E-mail: svdeylul@gmail.com

REFERENCES

Anderson, T. & Rivera Vargas, P. (2020). A Critical look at Educational Technology from a Distance Education Perspective. *Digital Education Review*, 37, 208-229. Retrived July 01, 2021 from https://www.researchgate.net/publication/342572548_A_Critical_look_at_Educational_Technology_from_a_Distance_Education_Perspective

Ball, S. & Pears, R. (2009). Inclusion benefits and barriers of "Once-Removed" participation. In C. Wankel, & J. Kingsley (Eds.), *Higher education in virtual world: Teaching and Learning in Second Life* (pp. 47-64). Emerald.

Baltaci, A. (2019). Nitel arastirma sureci: Nitel bir arastirma nasil yapilir? [The Qualitative Research Process: How to Conduct a Qualitative Research?] *Ahi Evran Universitesi Sosyal Bilimler Enstitusu Dergisi*, 5(2), 368-388.

Banic, A. & Gamboa, R. (2019, March 23-27). *Visual Design Problem-based Learning in a Virtual Environment Computational Thinking and Programming Knowledge.* [Paper presentation]. IEEE 2019: Conference on Virtual Reality and 3D User Interfaces (VR), Osaka, Japonya, DOI: 10.1109/VR.2019.8798013

Baskale, H. (2016). Nitel arastirmalarda gecerlik, guvenirlik ve orneklem buyuklugunun belirlenmesi [Determination of Validity, Reliability and Sample Size in Qualitative Studies]. *DEUHFED* 9(1), 23-28.

Burgess, M.L., Slate, J.R., Rojas-LeBouef, A., LaPrairie, K. (2010). Teaching and learning in Second Life: Using the communvity of inquiry (COI) model to support online instruction with graduate students in instructional technology. *Internet and Higher Education*, *13*(1-2), 84-88.

Bulbul, H. (2016). Gorsel sanatlar egitiminde alternatif bir ogretim ortami olarak Second Life [Second Life as an alternative teaching environment in visual arts education]. In Demirel, O., Dincer, S. (Ed.) *Egitim bilimlerinde yenilikler ve nitelik arayisi* (pp.1003-1016). Pegem A.

Buyukozturk, S., Kilic Cakmak, E., Akgun, O. E., Karadeniz Oran, S., & Demirel, F., (2019). *Bilimsel Arastirma Yontemleri* [Scientific Research Methods]. Pegem A.

Can, T. (2012). Yabanci dil ogretimi baglaminda ogrenen ozerkliginin sanal ogrenme ortamlari yoluyla desteklenmesi [Supporting learner autonomy through virtual learning environments in the context of foreign language teaching]. *Hasan Ali Yucel Egitim Fakultesi Dergisi*. *17,* (2012-1), 72-85.

Ciftci, S. (2013). Egitsel dijital oyunlarda ogretmen ve ogrenci rolleri [Teacher and student roles in educational digital games]. In Ocak, M., A. (Ed.). *Egitsel dijital oyunlar, kuram, tasarim ve uygulama* (pp.106-116). Pegem A.

Coban, Kalkan and Hinislioglu (2017). 3B Sanal Ogrenme Ortamlarinin Tasariminda Karsilasilan Teknik Zorluklar ve Cozum Onerileri [Technical Difficulties And Solution Suggestions Encountered in the Design of 3D Virtual Learning Environments]. In Y. Goktas (Ed.). *3 Boyutlu sanal dunyalarin egitimde kullanimi* (pp. 1-24). Pegem A.

Davis T.J., Phillips G., Kulm G. (2018) Creativity and the Design of Music-Mathematics Activities in a Virtual Simulation Learning Environment. In Freiman V., Tassell J. (Eds) *Creativity and Technology in Mathematics Education. Mathematics Education in the Digital Era* (Vol 10.), Springer, Cham.

Denzin, N. K. & Lincoln, Y. S. (2018). Triangulation. In. N.K. Denzin and Y.S. Lincoln (Eds.). *The Sage Handbook of Qualitative Research* (5rd). (p.777-804). Thousands Oaks, CA: SAGE, Inc.

Dolphin, S. (2020). A Design for Global Art Studies in an Immersive Virtual World. In Proceedings of EdMedia + Innovate Learning (pp. 1170-1179). Online, The Netherlands: Association for the Advancement of Computing in Education (AACE). Retrieved June 23, 2021 from https://www.learntechlib.org/primary/p/217433/.

Dreamson, N. (2020). Online Design Education: Meta-Connective Pedagogy. *International Journal of Art & Design Education.* 39 (3), 483-497.

Eisner, E. W. (2017). *The enlightened eye: Qualitative inquiry and the enhancement of educational practice.* Teachers College Press

Erbas, C. & Demirer, V. (2015). Egitimde sanal ve artirilmis gerceklik uygulamalari [Virtual and augmented reality applications in education]. In Akkoyunlu, B., Isman, A., Odabasi, H. F. (Eds.), *Egitim teknolojileri okumalari 2015* (pp.131-148). Ayrinti.

Erkan, I. (2020). Investigation of the contribution of virtual reality to architectural education. *Art, Design & Communication in Higher Education*, 19(2), 221-240.

Erturk, M., & Sahin, G. (2019). The use of Second Life game as a experimental learning model for learning social studies. *Hacettepe University Journal of Education*, *34*(2), 434-459.

Fedeli, L. (2016). Virtual body, implications for identity, interaction and didactics. In S. Gregory, M. J. W. Lee, B. Dalgarno, B. Tynan (Eds.). *Learning in virtual worlds research and applications.* 67-85. AU Press.

Fleischmann K. (2020). Online design education: Searching for a middle ground. *Arts and Humanities in Higher Education, 19*(1), 36-57.

Gelibolu, M., F. (2013). Egitsel dijital oyunlarin teknolojisi, turleri, siniflandirilmasi, derecelendirilmesi ve egitimde kullanilabilme potansiyeli [The technology, types, classification, grading and the potential used in education of educational digital games]. In Ocak, M., A. (Ed.), *Egitsel dijital oyunlar, kuram, tasarim ve uygulama* (pp. 70-104). Pegem A.

Girvan, C. (2018). What is a virtual world? Definition and classification. *Educational Technology Research and Development,* **66**(5), 1087-1100.

Girvan, C., Savage, T. (2019). Virtual Worlds: A New Environment for Constructionist Learning. *Computers in Human Behavior*, 99, 396-414.

Grivokostopoulou, F., Kovas, K. & Perikos, I. (2020). The effectiveness of embodied pedagogical agents and their impact on students learning in virtual worlds. *Applied Sciences*, 10(5), 1-14.

Han, H. C. (2016). Review on contemporary virtual art and design education. *The International Journal of Arts Education*, *14*(2), 81-100.

Han, H. C. (2019). Virtual World Construction and the Relationship to Creativity in Art Education. *Canadian Review of Art Education, 46*(1), 85-100.

Han, H. C. (2020). From Visual Culture in the Immersive Metaverse to Visual Cognition in Education. In Robert Z. Zheng (Ed.). *Cognitive and Affective Perspectives on Immersive Technology in Education* (pp. 67-84). IGI Global.

Harrison, R. (2009). Excavating Second Life cyber- archaeologies, heritage and virtual communities, *Journal of Material Culture*. *14*(1), 75-106.

Houser, J. (2016). *Nursing research: reading, using, and creating evidence*. (4rd ed.) Jones & Bartlett Learning.

International Society for Technology in Education (2016). ISTE standards for students. Retrieved 15 December 2020 http://www.iste.org/standards/standards/for-students-2016

Kalkan, N. (2020). Temel teknik beceri ogreniminde sanal gerceklik teknolojisinin etkililiginin incelenmesi: Masa tenisi ornegi [Examining the efficiency of virtual reality technology in basic technical skills training: table tennis case study]. (Doctoral dissertation). Available from Council of Higher Education, National Thesis Center, Dissertation ID: 622796

Karabatak, S. (2020). Second Life in education in Turkey: A methodological review research. *Anemon Mus Alparslan Universitesi Sosyal Bilimler Dergisi. 8*(3) 813–829.

Karakus Yilmaz, T. (2017). 3B sanal ogrenme ortamlarinda kullanilan yapilandirmaci ogrenme yaklasimlari [Constructivist learning approaches used in 3D virtual learning environments]. In Y. Goktas (Ed.), *3 Boyutlu sanal dunyalarin egitimde kullanimi* (p. 131-148). Pegem A.

Kaur, S. (2019). Arts and Education in the Virtual World: In Conversation with Bernhard Drax, Scott Grant, Chris Mooney-Singh and Jay Jay Jegathesan. *SARE: Southeast Asian Review of English. 56*(1), 83-93.

Loveless, A. M. (2002). *Literature Review in Creativity, New Technologies and Learning.* Bristol: NESTA Futurelab. https://telearn.archives-ouvertes.fr/hal-00190439/document

Mikropoulos, T. A., & Bellou, J. (2006). The Unique Features of Educational Virtual Environments. In P. Isaias, M. McPherson & F. Banister (Eds.) *Proceedings e-society 2006, International Association for Development of the Information Society* (pp.122-128). IADIS.

Niemi H., Harju V., Vivitsou M., Viitanen K., Multisilta J. & Kuokkanen A. (2014). Digital storytelling for 21st-century skills in virtual learning environments. *Creative Education, 5*, 657-671.

Palomo-Duarte, M., Berns, A., Balderas, A., Dodero, J.M., Camacho, D. (2021). Evidence-Based Assessment of Student Performance in Virtual Worlds. *Sustainability*, 13 (244), 1-17.

Reisoglu, I. &, Goktas, Y. (2017). 3B sanal ogrenme ortamlarinda buradalik, mesguliyet, akis ve uzamsal beceriler [Presence, engagement, flow and spatial skills in 3D virtual learning environments]. In Y. Goktas (Ed.), *3 Boyutlu sanal dunyalarin egitimde kullanimi* (pp. 85-104). Pegem A.

Reisoglu, I. & Kocak, O., (2017). 3B Sanal Ogrenme Ortamlarinin Egitimde Kullanimi: Karsilastirmali Analiz [3D Virtual Learning Environments' Use in Education: Comparative Analysis]. In Y. Goktas (Ed.), *3B Sanal Dunyalarin Egitimde Kullanimi* (pp.105-130). Pegem A.

Second Life Wiki (2021). Second Life bunyesinde sanal kampus kuran universiteler. [Universities establishing virtual campuses within Second Life]. Retrieved 23 June 2021. http://wiki.secondlife.com/wiki/Second_Life_Education/Resources#Academic

Second Life Wiki (2021). Second Life Glossary. Retrieved 30 June 2021. http://wiki.secondlife.com/wiki/Second_Life_Glossary

Stokrocki, M. (2011). Visual arts and multiliteracies in a digital age. Part of NAEA report: *Learning in a Visual Age: The Critical importance of Visual Arts Education.* National Art Education Association: Reston, VA.

Tokel, S. T. & Topu, F. B. (2017). 3B sanal dunyalar ve kullanim alanlari [3D virtual worlds and usage areas]. In Y. Goktas (Ed.). *3 Boyutlu sanal dunyalarin egitimde kullanimi* (pp.1-24). Pegem A.

Wagner, C. & Ip, R. K. F. (2009). Action learning with Second Life – A pilot study. *Journal of Information Systems Education, 20*(2), 249-258.

Wang, Y. & Braman, J. (2009). Extending the classroom through Second Life. *Journal of Information Systems Education, 20*(2), 235-247.

Wang, Y, Grant, S & Grist, M. (2020). Enhancing the learning of multi-level undergraduate Chinese language with a 3D immersive experience- an exploratory study. *Computer Assisted Language Learning*, (pp. 1-19).

Yasar, M. (2018). Nitel Arastirmalarda Nitelik Sorunu [Qualitative Problem in Qualitative Research]. *MSKU Egitim Fakultesi Dergisi*, 5(2), 55-73.

Yildirim, A. & Simsek, H. (2016). *Sosyal bilimlerde nitel arastirma yontemleri* [Qualitative research methods in the social sciences]. Seckin.

Yilmaz, R. M. (2017). 3B sanal ogrenme ortamlarinda etkilesim [Interaction in 3D virtual learning environments]. In Y. Goktas (Ed.). *3 Boyutlu sanal dunyalarin egitimde kullanimi* (pp. 71-84). Pegem A.

APPENDIX A

FOCUS GROUP INTERVIEW QUESTIONS 1

1- What do you know about virtual worlds?

Probe: Social media
Game, simulation
Website, computer, internet
Application (Apps)

2- What place do you think virtual worlds have in your life?

Probe: All recreational activities
Education
Culture
Contact
Disappearance of borders (time, space, etc.)

3- What aspects of your artistic development do you use the virtual world for?

Idea
Communication with the artists
Follow art
Production

4- What do you know about the 3D, online, multi-user "Second Life" virtual environment?

Probe: Social media
Simulation game
Website computer, internet
Application (Apps)

5-What do you think about using virtual worlds in education?

Probe: Virtual training
Distance learning
Simulation training
Creativity

6- What do you think about the fact that 3D designs can be made in online virtual environments?

Probe: Creativity
Abolition of borders
Cost
Ease of application

7- What do you understand from the expression of creativity?

Probe: Originality
Imagination
Doing research
Wonder
Break the boundaries
Push the limits
Invent
Aesthetic regulation

8- What are the examples of artistic creativity you encounter in virtual environments?

Probe: Designs

Artworks

9- Do you have any artistic creativity work in virtual environments before?

Probe: Designs

Artworks

Invention

10- Do you have any other opinions on the subject?

FOCUS GROUP INTERVIEW QUESTIONS 2

1- What do you think about what you have learned about virtual worlds?

2- What do you think about what you learned about "Second Life"?

3- What do you think about using virtual worlds in education?

4- What kind of roles and responsibilities do you think you have during the applications you have done in the training given to you in the Second Life virtual environment?

Probe: In the learning environment

Accessing information, activities, tasks

In communication

5- What kind of research did the Second Life virtual environment lead you to do?

Probe: Artworks

Museums and galleries

Virtual exhibition venues

Two and three dimensional designs

6- What kind of 3D designs did the Second Life virtual environment direct you to? Can you describe the effect it has on you?

Probe: Motivation

Willingness to research

Going beyond expectations

Creativity

Artistic arrangement elements and principles

Ease or difficulty of application

7- In what ways do you think the Second Life virtual environment will contribute to your artistic development?

Probe: Idea

Process

Product

8- What do you think are the strengths and weaknesses of designing in Second Life virtual environment?

Probe: Motivation

Willingness to research

Going beyond expectations

Creativity

Ease or difficulty of application

9- How does it make you feel to share the assesment criteria with you?

Probe: Positive

Negative

10- How did you feel during the design process in the virtual environment?

Probe: Researcher, excited, enthusiastic, learner, creative, critical thinker, curious, etc.

11- How do you think designing in Second Life contributed to your artistic creativity?

Probe: Cognitive Aspect

Critical thinking

Aesthetic questioning

Creative thinking

Problem solving

In terms of learning

Socially

Participation

Interaction

Taking responsibility

Cooperation

In terms of affective

Motivation

Wonder

12-Do you have any other opinions and suggestions on the subject?

APPENDIX B

STUDENT SELF-ASSESSMENT

Student number:

Dear students, this self-assessment sheet has been designed for you to make specific determinations about your own work. Please answer the questions below.

1- What is the meaning of my artistic work for me?

2- How much did I like this artistic work?

3- How do I find this artistic work when I compare it with my previous works?

4- What unexpected things did I encounter while doing my artistic work, how did I solve them?

5- What do I think I learned with this work?

6- What have I tried to do in my artistic work that I haven't tried before to strengthen the expression?

7- Could I use Second Life effectively enough to increase the creativity of my artistic work?

8- What did I think to strengthen the expression in my artistic work? What are the important choices I made in the implementation process?

9- Where can I use what I learned in this work? What is the benefit of this application for me?

10- If I did this work again, I would do it as follows:

11- What should I pay attention to in my next study?

APPENDIX C

STUDENT PEER-ASSESSMENT

Student number:

Dear students, this peer-assesment page is designed for you to make specific decisions about your friend's work. Please answer the questions below.

The best part of this work is;

……
……
……

Three other things I like about this work;

1……..……

2……..

3…….....

Three aspects that I think should be improved in this study;

1……..

2……..

3…… ……..

APPENDIX D

STUDENT'S ASSESMENT OF THE PROCESS

Student number:

Dear students, this process assessment sheet has been designed for you to make determinations about your own work process. Please answer the questions below.

1- What do you think you learned in this lesson / process / practice?

……
……
……
……

2- What do you like about the Second Life application?

……
……
……
……

3- What do you dislike about the Second Life application?

……
……
……
……

4- What kind of ideas for future work did you gain as a result of the Second Life application?

……
……
……
……

5- Do you think there will be studies that you will use the Second Life application outside of school?

……
……
……
……

6- What else would you like to have in the Second Life application?

……
……
……
……