

Material Development Based on Digital Storytelling Activities and Assessment of Students' Views

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ABSTRACT

In education system, as well as creating innovative classroom environments, it is necessary to choose effective teaching models and to structure and integrate these to the education program. Within this framework, the purpose of this study is to present students' views on developing materials based on digital narration for the teaching process in fine arts high schools. This study was designed as a case study. The study was conducted in Anatolian Fine Arts High School during the spring semester of 2014-2015 academic year. The sample of the study consisted of a total of 10 students from 9th and 10th grades who voluntarily participated in the study. Semi-structured interviews were conducted with the 10 students named at the end of every activity. Assure instructional design model was used while designing digital storytelling activities. The data obtained from the study were analyzed through thematic analysis based on qualitative research method. Reliability method suggested by Miles and Huberman was used for reliability assessment of the study. The reliability of the thematic coding of the results was found to be 0.95 as a result of assessments. Based on the findings that digital storytelling has multidisciplinary interaction competence, it is thought that it will be appropriate to conduct future studies in different schools and fields.

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1. INTRODUCTION

The relationship between art and technology has developed directly proportionally throughout history. Thus, many fields of art have been greatly influenced by all the innovations of the digital age. "For this reason, in parallel with the change of art in the new age, change has become inevitable in art education"[1]. Art education has the functions of intermediating specific programs designed for the comprehension of the place and significance of art in life, transferring education, knowledge, skill and culture as well as educating creative and productive individuals. Thus, education gains a meaning of giving individuals humane values beyond its aspect of teaching. When considered within this context, the need for some new educational approaches and transformations is inevitable. In the age of information that we are living, every kind of change in social, political, scientific and technological fields should be in interaction with art and consequently art education. Art education can continue its existence for reaching its aim only within such an interaction and cooperation. "Otherwise, as long as art education does not renew itself in time in line with the needs of developing technology and the society, it will always be behind the times and deal with ever increasing problems" [3]. "Thus, it seems inevitable for education programs to include (digital) technologies with content and form within their content" [11].

However, within the information and technology age that we live in, while students who will be educated in fine arts should have 21st century skills, the review of literature on the content of art education does not show any learning outcomes or activities that correspond to all these developments and it is generally observed that “teachers have lots of problems in integrating technology to class environment and students cannot go any further than using some technological devices within the classroom” [8]-[12]-[6]. For art education program to keep up with the huge growth in information and technology, when the characteristics of millennium learns, who are a new generation, are taken into consideration, the old fashioned educational approach that is still continuing should change and technology should be effectively integrated with content and teaching practices within art education.

In this sense, as a result of the literature review in the field, considering that the approach of digital storytelling has the potential to meet the needs of 21st century and the statements of the advocators of digital storytelling that the process of digital storytelling realizes “18 of 20 expectations determined for 21st century skills” (cited from: [10]), it can be thought that the problems related with technology integration in fine arts education can be solved by integrating the approach of digital storytelling to fine arts education.

Digital storytelling provides opportunities such as enabling students to explore themselves, enabling students to use technology effectively, increasing motivation in education process and personalizing learning experiences, finding out expectations of teaching process and playing an active role in meeting needs and thus, it can be said that it is a suitable model for both teachers and students in terms of technological pedagogic content knowledge. As stated by Gils [7], digital storytelling approach has positive aspects such as presenting students with customizable learning experience, being transferrable to real life or relatable with real life and enabling students’ participation and maintaining continuity of this participation in the learning process. The purpose of this study is to develop materials based on digital storytelling approach for the teaching process in Fine Arts high schools and to assess students’ views.

2. RESEARCH METHOD

The study was designed as a case study. Case study method includes the thorough longitudinal examination of one case or event instead of examining limited number of variables and following specific rules. Case study is a research method of thorough examination within the context of “How” and “Why” questions in the field of especially education. “Case study is used to examine and define thoroughly the details that make up an event or a case and to assess the event.” [5]. The study was conducted in Anatolian Fine Arts High School during the spring semester of 2014-2015 Academic Year. The sample of the study consists of a total of 10 students from 9th and 10th grades who voluntarily participated in the study under the title of free time activity. Semi-structured interviews were conducted with the 10 students named at the end of every activity. Semi-structured interviews were conducted right after the completion of the related teaching activity and they were audio recorded.

The data obtained from the study were analyzed through thematic analysis based on qualitative research method. The data obtained were examined thoroughly within the framework of themes determined based on the theoretical framework of the study. “Within the framework of thematic analysis, the data obtained are first defined, then the data defined are interpreted and the cause and effect relations between the data are interpreted by the researcher” [15]. In this context, the research data were analyzed in two stages in line with the conceptual framework of the research and the research questions. In the first stage, the semi-structured interviews with the students and the observation data were itemized and analyzed. In the second stage, the students’ views were analyzed and interpreted based on themes determined within the context of the study’s conceptual framework. For the reliability of the data obtained, the interviews were coded and main themes and sub-themes were formed. The findings were categorized, put in tables with the comments of the researcher and presented to an expert in the field (researcher and a field expert on fine arts education). A research can be said to be reliable if it has a 70% and higher reliability coefficient as a result of the formula of $\text{Reliability} = \frac{\text{Consensus}}{\text{Consensus} + \text{Dissensus}}$ [13]. Within this framework, after the findings of the pilot study were coded and the themes with consensus and dissensus were found, reliability was assessed. As a result of the assessments, the reliability of the thematic coding of the findings was 95%.

2.1. The process of material preparation, forming the teaching design plan

Within the process of preparing the digital storytelling materials, a systematic planning should be made for making use of technology effectively. One of the most suitable methods for making such a planning is the Assure model [2]. Assure Instructional Design Model was used while preparing the lesson plan of the digital storytelling free time activity formed within the context of digital storytelling approach. “Assure model is the teaching design model which is prepared by choosing suitable methods, media and materials in

line with our students' characteristics and the teaching goals" [14]. Assure model has been named with the initial letters of the six stages as shown in Figure 1.



Figure 1. Stages of the ASSURE Instructional Design Model [2].

Instructional design can be defined as the guidance of instructional materials and teaching system to ensure learning. "Instructional design can be designed as the process of developing instructional equipments and activities by making use of learning theories in line with instructional programs and the process of the assessment of teaching and learning and assessing the learners" [2].

2.1.1. Analyze Learners

A. The general attributes;

- a. Age: 14-15 (formal operational stage)
- b. Classroom size: 10
- c. Gender: 6 males, 4 females
- d. Students' socio-economic level is intermediate.

B. Prior competencies (Students' competencies);

- a. It can be seen that they have the technological information background to be able to go through with a lesson that has digital storytelling content.
- b. While all of the students had smart phones, only 5 of the students had computer at home. The students who did not have computers were found to have problems caused by the absence of lessons that can give them basic computer/program information in their schools and those who had computers were found to be active in class.

2.1.2. State Standards and Objectives

Within the context of digital storytelling activity, the students

- a. create an original script
- b. create a storyboard
- c. design characters
- d. do background composition/arrangements
- e. do dubbing/ sound editing
- f. fictionalize with suitable software
- g. have the competence to use technology

2.1.3. Select Strategies, Technology, Media and Materials

In digital storytelling activity, which is based on cooperative learning method, a number of software have been set to work intended for students' learning outcomes. During the design process, the products were made by tablet, they were prepared for storytelling by using Adobe Flash, AdobePhotoshop, AdobePremiere software and sound editing programs were used during the process of dubbing. In addition, Web 2.0 applications were used for extracurricular sharings of students, their communication with each other and for product assessment.

2.1.4. Utilize Technology, Media and Materials

Each student in digital storytelling activity chose their groups according to their interests and after the groups were formed, the students responsible for montage realized the storytelling process through predetermined software within the process of montage. Whatsapp mobile application was used to enable students to communicate with each other under the group name of digital storytelling group and students shared and assessed videos on Facebook.

2.1.5. Require Learner Participation

The groups located suitably for the structure of digital storytelling and the students in the group were made to participate actively among themselves and with their friends in the group in every stage of the activity through discussions, question-answers and computer assisted teaching methods.

2.1.6. Assessment

The criteria for the assessment of digital storytelling application were found and assessed by experts in the field.

2.2. Deciding on the subject

When the researcher met the students to decide on the subject, he stated that the subject would be determined based on the method of brain storming and after telling the rules of the brain storming method, the researcher started the session. One of the students was put in charge of writing down all the suggestions. After the suggestions were taken, the themes suggested were evaluated and voted. At the end of voting, the students decided to create one script under the title of "Welcome to the world", which included the themes of women's rights, environmental pollution, individual problems and depersonalization.

2.3. Forming and organizing the scripts

The students who were responsible for forming the script presented the drafts they formed to their friends in the activity and finalized the script they developed with the feedbacks from their friends with the help of a script writing program.

2.4. Creating a storyboard

Storyboard is one of the important and essential stages of planning. Finishing the storyboard before montage is very important in terms of correct timing and determining the camera angles of the video film. Storyboard, which can be called the drawing of the story, can be thought as the preview of the film. Storyboard consists of drawings of the script divided in frames with extreme moves.

In digital storytelling activity, after the students who were in the script and storyboard group completed writing the script, they started to create the storyboard to visualize the scene plans of digital storytelling. While the students drew with classical method at first, they preferred to create storyboard on tablet later on. The students presented the storyboard they created to their friends in class and they made the necessary corrections in line with the critics of their friends and finalized the storyboard. The storyboard created by Cenk within the context of digital storytelling activity is given in Figure 2.

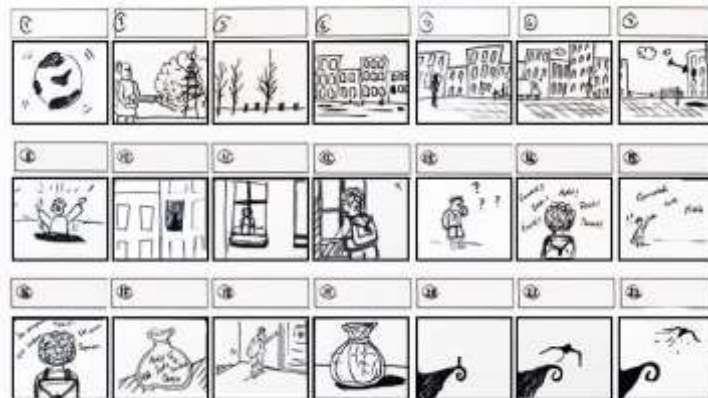


Figure 2. The Storyboard Created By the Student with the Code Name Cenk

2.5. Character and location designs

The process of character development is the process of visualizing the characters in the script. While developing character, the characteristics in the script should be taken into consideration. The students who were responsible for developing character in digital storytelling activity cooperated with their friends who created the script, determined the physical characteristics of the characters and created their characters in line with the feedback from each other within the group.

It is the process of visualizing the location in which the script takes place. The student responsible for the design of the location communicated with the other students in the script group and created the most suitable visual for the scenes. In one of the critical scenes, a work of art by Van Gogh was interpreted Figure 3.

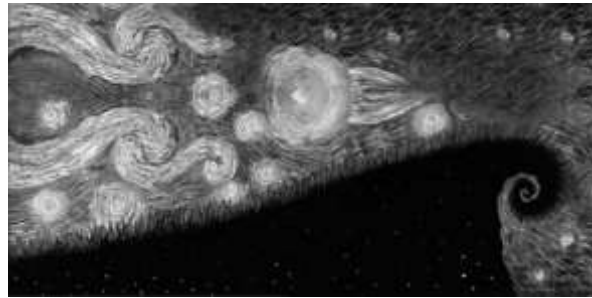


Figure 3. Design of the location

2.6. The stage of animation

During the digital storytelling process, the animations were formed with a mixed technique that consisted of two dimensional linear, 2 dimensional vectorial and flash animation techniques. During the animation process,

- a. Animations with 2 dimensional animation technique: Some of the 2 dimensional animation created by the student Birol during the process are presented in Figure 5.
- b. Animations with 2D vectorial animation technique: In one of the scene plans in the digital storytelling video, Earth's rotation its own axis was to be animated. After the students discussed how they could animate this, the student with the code name Emre decided to realize the Earth's rotation in "Adobe Flash Player" program. His animation was liked by his friends and used in the video. In addition, the drawings by 2 dimensional animation techniques were brought together and animated in Adobe Flash Player program.

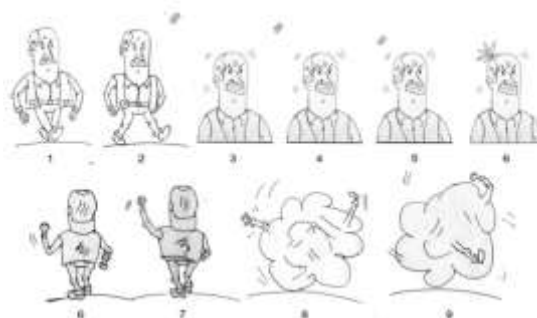


Figure 4. Two dimensional animation scenes

2.7. Investigation of the multimedia material

The students investigated the material such as pictures, music, graphic, etc. that they would use in digital storytelling. They reached the multimedia material needed with the help of the researcher. "In digital storytelling, copyright should be considered while choosing music" [16]. In digital storytelling activity, while choosing the music, after a talk about copy right, the students began to investigate from which sites to

download music. In digital storytelling application, “bensound” and “VMM” sites were used which enable downloading music for youtube and multimedia projects without any payment.

2.8. Dubbing

In the 7th week of the application, the students performed dubbing outside the activity hours within the framework of the dialogues specified. They shared these in class with the editing they conducted on dubbing.

2.9. Preparation period of credits

The student who was responsible for the credits at the beginning and the end of the digital storytelling video prepared the credits on the white board with white board technique through “videoscribe” program which enables preparing animations. Sections from the credits are prepared by the student with the name Cenk.

2.10. Finding the suitable software and realizing the montage

During the design process, the students colored their drawings with the help of Autodesk Sketchbook Pro software in tablet and with the help of Adobe Photoshop program over tablet. Within the process of design, Adobe Flash Player, Adobe Premiere software was used.

2.11. Sharing digital storytelling on the internet

Digital storytelling video was shared on Facebook account created in advance for all the students in the digital storytelling activity to watch and assess the video. In addition, the video was shared on YouTube. In addition, the digital storytelling created at the end of the activity was presented in DİSTCO (Digital Storytelling Contest) international contest.

3. RESULTS AND ANALYSIS

3.1. Findings based on students' views about the activities carried out in the process

During the process, after the students were informed about digital storytelling, they were asked about which components of digital storytelling they wanted to include in the process. Within this framework, the students stated that they got pleasure from the process within the framework of the sub themes of ‘Drawing’, ‘Using social Networks and messaging applications’, ‘presenting ideas’, ‘Dubbing’, ‘Designing characters’, ‘Coloring the drawings on computer’, and ‘Learning the stages of animation’ and they were pleased that these were within the process (Table 1). Most of the students stated being pleased about drawing. One of the students, Esen, stated her views about the theme of ‘Drawing’ with the sentence “The funniest and easiest part was the drawing...” and emphasized about having fun in the drawing process. One of the students, Esen, emphasized that using animation in the process and seeing the stages of creating attracted her attention and interpreted her views about the theme of ‘Learning about the stages of Animation’ as “I participated in the Project because it attracts my attention and because it is related with the field of animation. It was the first team work that I participated in. In this activity, I learned how animation is done.”

One of the students, Eren, mentioned about the importance of transferring drawings to computer and coloring the drawings on the computer with his views “The funniest part is bringing the drawings to life and coloring them on computer after drawing.” Eren said “We both learned in class and texted each other on Facebook. We texted each other on Whatsapp. We had already formed the group. Everyone could communicate from there” and emphasized the importance of social network and messaging application within the communication during the process. Esen emphasized the significance of the use of social network and messaging application with the sentence “I communicated with my team face to face and through online means of communication.”

Table 1. Students' views about the activities carried out in the process

Activities that are performed in the process	f	%
Drawing	7	77.7
Using social networks and messaging applications	2	22.2
Presenting ideas	2	22.2
Dubbing	2	22.2
Designing characters	2	22.2
Coloring the drawings on computer	1	11.1
Learning the stages of animation	1	11.1

Esen stated her views about the sub-theme of ‘Presenting ideas’ with the sentence “I think the application is quite useful. The fact that my ideas were taken was one of the things that I liked about the study” while Hiranur explained the opportunity of forming ideas caused by the activity and how this opportunity influenced him by saying “In other lessons, we listen to the teacher while the teacher is teaching and do as he does, but when we study by ourselves, we have both our own ideas and our own style. I like this more since it belongs to me completely. Taking information and doing by myself..”

Based on students’ views during the process of practicing within the framework of the themes specified, it was decided to conduct the project based on the students’ drawings, to make activities which include remaking and coloring the drawings on the computer, to show how to use the program about dubbing and making sound-editing, to use Facebook and especially whatsapp for feedback interactions during the process, to create the digital narration with animation based on animating the drawings made during the process and to determine all the design elements to be used in digital storytelling application in accordance with the ideas put forward by the students.

3.2. Students’ views about group work

During the process, students’ views about group work were researched. Within this framework, students stated their view within the scope of the sub-themes of “eagerness to do group work”, “cooperation in group work”, “variety in ideas based on group work”, “forming the groups based on students’ interests”, “making decisions in groups in group work”, “assisting learning with group work”, “students’ self-exploration during group work”, “including peer assessment in group work”. Within this framework the students stated their views about sub-themes as shown in Table 2.

Table 2. Students’ views on group work.

Performing group work	f	%
Eagerness to do group work	5	55,5
Cooperation in group work	3	33,3
Variety in ideas based on group work	3	33,3
Forming the groups based on students’	3	33,3
Making decisions in groups in group work	3	33,3
Assisting learning with group work	2	22,2
Students’ self exploration during group work	1	11,1
Including peer assessment in group work	1	11,1

One of the students, Emine, stated her views about whether she preferred to work individually or within a group during the process based on the sub-theme of ‘eagerness to do group work’ with the sentences “I would prefer to work in a group because I can see my shortcomings. I can see the aspects that I want to develop about myself. This is very good, I liked it.” Another student, Hiranur said “We did not experience any problems in intragroup communication. Everyone helped each other. We made the decisions as a group” and emphasized the reasons for preferring group work. Another student, Eren, said “For the first time in my life, I did group work in high school with this Project ...” and mentioned the lack of group work within the instructional process. One of the students, Emine, stated her views within the context of the sub-theme ‘Cooperation in group work’ and interpreted about how cooperation based on mutual interaction took place: “For example, I was in the last grade while they were 2nd or 3rd graders. Their drawings were less developed in my opinion. I helped them. I also learned from them. My friend from a lower grade wrote the script. I liked this very much. I would not be able to write the script at all if it was my duty.”

Another student, Esen’s views about the themes of “variety in ideas based on group work” and “cooperation in group work” are as follows: “I would not like to conduct this work alone. We could put forward clearer ideas in the group. I would not be able to be this successful by myself. It is more efficient to work as a team. There is an abundance of ideas and criticism... I liked team work a lot. There was a warm environment within the Project.”

Another student, Hiranur, put forward the following views within the framework of the same themes: “I think that group work is good. It is more logical to work in a group instead of working alone because of new things, new ideas, someone says something and it all becomes better. Cenk wrote our story, when he read the story we all gave other ideas and changed that story...In group work, when I take ideas from someone else, I can do better. Alone, one cannot see his/her mistakes, someone comes and says there is a mistake there. I love working with my friends more. I don’t like working alone. That’s why I don’t work at

home. I work in the workshop. That's why I liked working as a group more... I learned that working as a group is a good thing. That it is useful."

Another student Eren said about the sub-theme of "forming the groups based on students' interests": "I chose my group completely according to my talents and interests." Hiranur said "I think that I chose the right group." Esen said "I decided on my group based on the animation group. There were others in my team who were interested in animation and thus, we got impressive results. I am sure that I made the right choice." All of the students made their group choices in accordance with their interests. This was a process in which the students considered their own competence. Thus, they had active participation in the process. The fact that they participated in a process they felt good with their own choices increased their interests about participating in the process.

Within the context of the sub-theme "Making decisions in groups in group work", Eren told about his experience about the decision taken together with the sentence "We made decisions as a group. Everyone made the speech, and then we got together. We decided on who was going to make dubbing." Within the context of the sub-theme "Assisting learning with group work", Emine said "I learned more as a team" and emphasized the contributions of working together. Eren made remarks about the learning experience he had by taking decisions with his friends. Eren's views are as follows: "...I had new friends, I learned new things. It is better to work as a group instead of working alone. It was better in terms of design. We started to draw when the characters began to come out. We got together and everyone looked at the drawings. We discussed and developed together." Within the context of the sub-theme "Students' self-exploration during group work", Emine emphasized that the practice during the process gave her opportunities to explore herself by saying "You can see the sides you want to develop about yourself. I liked this very much." Within the context of another sub-theme "Including peer assessment in group work", Esen said "we could comment about each other's characters." Emine expressed her views about the sub-theme of "communication in group work" as "I did not have any difficulties in communicating."

About the last sub-theme of the main theme "Performing group work", "developing self-confidence in group work", Eren said "This work improved my self-confidence." Making students feel self-confidence is in fact associated with students' taking part within the process according to their interests and giving them the opportunity to make choices because while choosing their groups, the students chose the groups that they could best express themselves in. Thus, their self-confidence was triggered positively.

Within the context of the findings obtained from the study, it has been found from many aspects that group work affects students positively. Thus, it was decided to include group work within the process of the actual application to be performed after the pilot application. Within this framework, decisions were taken during the process which can be listed as cooperation based on group work, presenting ideas, giving students opportunities to make choices based on their interests, giving students chance to make decisions in groups, using activities that support learning together within the group, developing awareness in students in terms of students about the opportunities given to them to recognize themselves and making students include peer assessment while developing the process and the primary application process was developed within the framework of these decisions.

3.3. Findings Based On Students' Views About the Problems That Came Out within the Process

According to students' views, some problems encountered during the process are remarkable. These problems were thematized as presented in the Table 3.

Table 3. Students' views about the problems that came out within the process

Problems that came out within the process	f	%
Problems about determining the subject	2	40
Problems about sharing responsibility in group work	1	20
Problems caused by students' being from different	1	20
Problems about preparedness	1	20

Within the framework of the sub-theme "Problems about determining the subject", one of the students, Esen, stated that in fact the process progressed well but it was difficult for them to find a subject by saying "Team work went well. To find the subject, we came a long way during the process of starting the drawings. It was the longest and hardest discussed subject within the Project." Ertan said "It was difficult while designing and thinking, but it was a lot of fun. I wanted to do once more" and mentioned the difficulty of deciding on the subject and designing. However, the students emphasized that they took pleasure from the process even though it was difficult.

Within the framework of another sub-theme “Problems about sharing responsibility in group work” Hiranur’s views are as follows: “Some friends had problems in taking responsibility. They could not draw well. I mean, there weren’t very good things. While there were very good shades in some, some were very simple.” Within the framework of the sub-theme “Problems caused by students’ being from different grades”, Ertan mentioned that there were problems caused by students’ being from different grades and expressed his views as follows: “Since we were from different grades, our lessons overlapped. There were problems of not being able to come.” Within the framework of the sub-theme “Problems about preparedness”, one of the students, Emel, expressed her views as: “We do not have any branches. We learn everything. As 12th graders, we have to learn about graphics this year, but we don’t. There are programs in the curriculum, but we don’t use them.” Within this context, she mentioned that it is not a technology focused program and the lessons do not have such content.

Within the framework of the problems encountered by students during the process, it was decided that especially the process about determining the subject should be planned better, the distribution of responsibilities should be managed with more interaction, students from different grades should have programs in accordance with each other and more place should be allocated to the teaching of programs related with design. In addition, due to infrastructure problems observed in the school, the activities in the pilot study were conducted at Ondokuz Mayıs University, Faculty of Fine Arts, Computer Assisted Design Laboratory. This situation positively encouraged the students and also having richer equipment and software opportunities were reflected positively in the process. Thus, it was decided to use the same laboratory environment in the actual application process.

In addition, some decisions were taken in the process based on the observations of the researcher. First of all, 12th graders were excluded while determining the level of grade. The fact that 12th grades had an intense program due to their preparation process and the problems encountered while participating in the activities caused such a decision to be taken. Since there were not sufficient computers in the school during the pilot application, the process of designing with computer started late and this negatively affected student motivation. Thus, it was decided to ask the students to bring their personal computers from the start of the actual application. In addition, the researcher decided to bring his own computer and drawing tablet to school for students to use. Within this framework, it was decided to keep the required equipment ready and to create the opportunities at the beginning of the second application. Since the process of determining the subject took long during the process of pilot application, it was decided to keep the process of determining the subject short in the actual application and to use mutual interaction within the framework of brain storming based on focused group interview. In order to increase students’ motivation during the process, it was decided by the researcher to send the product resulting from the actual application to an international competition about digital storytelling.

4. CONCLUSION AND DISCUSSION

In line with the results obtained in the spring semester of 2014-2015 Academic Year, it can be said that the application process of the activity took a long time due to reasons such as the facts that it takes a long time to conduct the application in general, some of the students were irresponsible and the programs of students from different classes overlapped.

In digital narration activity, it was found that students were happy about structuring a process which was focused on performing the application and being guided rather than a teacher centered approach. The results that students create an environment that enables them to understand each other better through cooperation and continuous communication with digital narration activity resulting in sharing their ideas and expressing their thoughts freely shows that students developed their learning skills through communication. While it was found that students liked different activities within the process of creating digital narration and that students mostly liked using technological materials during the process of montage, it was also found that the students’ interest in technology caused them to have a high interest in the activity. Within the context of technological skills, it was found that students developed their skills in terms of channeling their ideas and sources to digital environment and as a result of making preferences as a group in line with their interests and abilities, they were more active in the process of digital narration and they were able to express themselves better. Since the students organized multimedia tools for their own purposes and wishes, developed media skills and communicated during the activity, they were found to have developed their critical thinking and problem solving skills. Thus, it was concluded that digital narration approach, which was included in the art education process as a teaching design model, was able to fulfill students’ expectations and the requirements of the age.

5. RECOMMENDATIONS

Within the context of the study, it was found that digital storytelling activity was effective in developing students' skills oriented for 21st century education. Within this framework, it is thought that digital storytelling activity can be both a separate lesson and can be practiced within the scope of theoretical lessons in fine arts high schools.

According to the results of the study, it can be seen due to some problems caused by the fact that digital storytelling activity was planned as a free time activity, the application period took longer and students had problems about completing the montage. Thus, it is recommended that the processes within digital storytelling activity should be conducted within a shorter period of time. The study was conducted in fine arts high school art department within the context of fine arts education. Based on the findings that digital storytelling has the competence for interdisciplinary interaction, it is thought that it will be appropriate to conduct future studies in different schools and fields.

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