

The Effect of Digital Storytelling in Improving the Third Graders' Writing Skills*

Ahmet YAMAÇ^{a**}

Mustafa ULUSOY^b

^a Erciyes University, Turkey

^b Gazi University, Turkey

Received: 26 June 2016 / Revised: 12 September 2016 / Accepted: 21 September 2016

Abstract


The aim of this action research was to investigate the effects of digital storytelling in improving the writing skills of third grade students enrolled in rural primary schools. The writing performances of the students were measured before and after the teaching procedures of digital storytelling. Then, the process of narrative writing with digital storytelling was profoundly and carefully explored through observation and field notes, interviews, audio and video records, student diaries and documents, and student products. The results indicated that digital storytelling enhanced students' ideas, organization, word choice, sentence fluency, and conventions in terms of writing quality. Similarly, the digital storytelling improved story elements and word counts in stories. In terms of the quality of students' digital stories, the results demonstrated a steady progress in the elements of digital stories, and the technology literacy and competency of students throughout the process. Besides, the digital storytelling modified the process of narrative writing, and emerged as a beneficial tool to overcome the digital divide by developing students' new literacy perception, competency, and skills. The digital storytelling also created learning community by improving interactions among students in the classroom, and increased their motivation to write.

Keywords: Writing instruction, digital storytelling, disadvantaged students, digital divide and new literacy.

Introduction

The recent studies have reiterated the fact that the students who fall behind until the third grade in terms of reading achievement are not able to keep up with their peers, and the gap among the peers increases gradually (Annie E. Casey Foundation, 2010). Considering the significant effects of the internet on the new literacy, children should be trained with the opportunities in the new literacy starting from the earlier stages of their childhood. Although the children from the high socioeconomic level interact with the information technologies and internet from the early years within the bounds of opportunities (Coiro, Knobel, Lankshear, & Leu, 2008; Cooper, 2004), the children from the low socioeconomic

* This study has been derived from the first author's doctoral thesis completed at Gazi University Graduate Institute of Educational Sciences.

**  Corresponding author: Ahmet Yamac, Erciyes University, Elementary Education Department, Kayseri, Turkey, Phone: +90(352)2076666 E-mail: ahmetyamac@erciyes.edu.tr

level are deprived of these opportunities (Forzani & Leu, 2012; Leu, O'Byrne, Zawilinski, McVerry, & Everett-Cacopardo, 2009). A range of studies have also pinpointed that some variables such as gender, age, race, parents' educational levels, class and region result in a digital divide in the access and use of internet and computer (Bimber, 2000; Hoffman & Novak, 1998; Leu, Forzani, Rhoads, Maykel, Kennedy, & Timbrell, 2014; Li & Ranieri, 2013; Zhao, Lu, Huang, & Wang, 2010). The students from low socioeconomic level could not have the opportunity to interact with internet and information technologies, and they have a limited access to the internet sources at home. Therefore, the gap between the students from high and low socioeconomic levels expands steadily, and it becomes a requisite to help the students in disadvantaged regions develop their new literacy skills. Thus, the aim of the current study is to examine the effect of digital storytelling as a multimedia learning tool on the rural primary school students' writing skills.

Writing Instruction

National Commission on Writing (NCW) declare writing as the most neglected domain among reading, writing and arithmetic research in its 2003 report. Today, the importance of writing has gradually been increasing in terms of self-expression and communication with world. Although the role of writing is emphasized in professional and academic achievement (Graham & Perin, 2007a; NCW, 2003-2004), many studies in Turkey and other countries have reported the students' insufficiencies in their writing skills (Arıcı & Urgan, 2008; NCW, 2003; National Center Education Statistics [NCES], 2012; Salah-Din, Persky, & Miller, 2008).

Writing research was influenced by the methods of psychology and anthropology in the last century (Prior, 2006). At first, writing research was under the influence of cognitive models and theories. Some of these models were the ones proposed by Hayes and Flower (1980), Bereiter and Scardamalia (1987), and Hayes (1996). After the criticism that the scientific paradigm of cognitive fail to understand the context of writing, the studies (e.g. Englert, 1992; Englert, Mariage, & Dunsmore, 2006; Prior, 2006; Russell, 1997; Schultz & Fecho, 2000) headed for examining the effect of social, historical and political contexts on writing. Then, researchers have tended to study on the socio-cultural aspect of writing.

Literacy as a social practice scrutinizes how the culture, history and environment of students are intertwined with literacy (Skinner & Hagood, 2008). Today, reading and writing improved on to be collaborative and social. Due to the time spent on social cyber networks, we are able to communicate with others through a click (Bromley, 2012). The constantly developing internet technologies allow us to disseminate our views to millions of people and exchange our ideas. We can learn what is happening even in the remoter parts of the world in a short time. The opportunities of information and communication technologies emphasize the social and cultural aspects of reading and writing skills.

Individuals construct their identities on contexts and experiences, and they intrinsically do not discriminate their identities apart from social context and interaction (Vasudevan, Schultz, & Bateman, 2010). Students can make a story of the experiences on their cultures and histories by forming a composition with digital storytelling. Thus, digital storytelling has a significant potential to construct literacy identities within the context of home, society and school (Foley, 2013; Vasudevan et al., 2010).

Digital Storytelling

As a multimedia tool, digital storytelling is a means of educational technology (Dogan & Robin, 2009). Story or storytelling is literally a tradition of centuries. Communication through written stories, written books and notebooks used to build the core of the instruction. Today, new generation storytelling starts with digital storytelling which

integrates pictures, music and audio through computers (Hett, 2012). Digital storytelling is a process that blends media to enrich and develop spoken language. Multimedia storytelling is the modern expression of an old art (Frazel, 2010). For Ohler (2008), “digital storytelling (DST) uses personal digital technology to combine a number of media into a coherent narrative” (p.15). According to Robin (2006), the common definition focus on the blend of storytelling with multimedia elements such as pictures, audios and videos. Thus, all digital stories combine digital graphics, audios, videos and music to present information, and they have a certain theme and viewpoint as in the traditional stories. Stories are usually a-few-minutes-long, and can be used for various purposes, including the telling of personal-narrative story, the re-telling of historical events, or as a means to inform or instruct.

A variety of studies indicated that digital storytelling enriches learning environment, curriculum and learning experiences (Sadik, 2008), develops the technical, presentation, research, organization and writing skills (Dogan & Robin, 2009), enhances learning motivation and problem-solving capacities (Bumgarner, 2012; Hung, Hwang, & Huang, 2012), develops academic achievement, attitude, motivation and learning strategies (Kahraman, 2013; Demirer, 2013), makes students gain self-confidence (Yüksel, 2011), and strengthens the sense of voice, story organization, multimedia literacy skills and writing skills (Bumgarner, 2012; Kulla-Abbot, 2006; Sylvester & Greenidge, 2009).

Digital Storytelling and New Literacy

Reading or writing a text does not mean that students are literate. Today, students are supposed to understand, practice, analyse, synthesize, evaluate and compose the information. Considering the fact that information has been growing and getting complicated day by day, students should have multimedia literacy skills to have an access to all kind of texts including traditional texts, visuals and hypertexts (Thesen & Kara-Soteriou, 2011). Traditional storytelling has been used to improve the literacy skills of students by activating their language skills such as reading, writing, listening and speaking. Digital storytelling expand literacy to a digital dimension by integrating traditional and new literacy skills. Students benefit from a variety of digital tools (IMovie, Photostory, microphones, digital cameras and scanners etc.) effectively owing to digital storytelling. They also integrate their understanding, problem-solving skills and critical thinking skills, and employ technology in a creative way (Ohler, 2013).

Digital storytelling develops not only the traditional literacy skills such as reading, writing, speaking and communication but also new literacy skills that are highly required in multimedia environments. A variety of studies revealed the potential of digital storytelling to develop the skills of 21st century such as technical , presentation , research, editing, and writing skills (Dogan & Robin, 2009; Dogan, 2012; Dogan, 2007). Some further studies also reported that digital storytelling develop the multimedia literacy, sense of voice and story organization (Kulla-Abbot, 2006) and the cultural identities, basic literacy and new literacy of students by linking the extramural and intramural contexts (Skinner & Hagood, 2008).

Digital Storytelling and Writing Instruction

The deep processing for which writing is so often noted is crucial to the DST process because it engages storytellers in personal reflection prior to their using technology that has the potential to distract them from the intent of their project. It's simple: when students write, they think. No matter how sophisticated our technology becomes, the future of DST will involve writing and conventional forms of literacy (Ohler, 2008, p. 59).

Students who have difficulties in writing are not often strategic writers. Digital storytelling might help students to be strategic writers. Clearly, digital storytelling decreases the lack of students on the issues such as spelling, punctuation and handwriting. Storyboards facilitate

the events to flow in a reasonable and sequential way. In case of an interruption or breakdown, writers can arrange storyboards before the audio recording. Digital storytelling not only motivates unsuccessful students by including them in multimedia processes but also makes them progress from bad writing to good writing (Sylvester & Greenidge, 2009). Digital storytelling help students manage and understand their writing process. Furthermore, students discover their lives in both a strange and familiar environment (Saunders, 2014).

A variety of studies on the use of digital storytelling in writing instruction revealed that digital storytelling motive students to write more explicitly and detailed stories by expanding the audience (Foley, 2013; Sylvester & Greenidge, 2009; Vasudevan et al., 2010) and increase the participation levels and writing self-efficacy of students (Banaszewski, 2002; Bumgarner, 2012; Campbell, 2012; Hathorn, 2005). Besides, digital storytelling encourage students to use their own styles (Lee, 2014), stimulate life experiences of students and strengthen the writing process (Bumgarner, 2012; Saunders, 2014) and increase the numbers of total words, exact sentences and correct words (Xin, 2013). On the other hand, digital storytelling serve as a tool in self-authoring process (Davis, 2004) and develop a common language about writing identities, and writing process by engaging digital media at primary schools (Foley, 2013). With the help of digital stories, students both comprehend the organization of stories throughout the processes for reflection, editing and feedback (Kulla-Abott, 2006) and have a deeper understanding on the revision process (Stojke, 2009).

To conclude, the nature of literacy has been changing in the light of the developments in internet and computer technologies. From the perspective of writing, the writing performance which is based on paper and pen has been also changing sharply. Some of these changes are authoring multimedia, writing in e-journals, writing in blogs and expanding audience through internet, etc. Digital storytelling as one of the multimedia tools has been used increasingly in the writing instruction. Considering the fact that the students from high socio-economic level engage with internet and technology in their lives from the early ages, the divide between the students from high and low socioeconomic status has been stepping up. In terms of writing instruction, the lack of writing skills might indicate the need for individuals to study more. Therefore, there is a need for the further studies which aim to answer how digital storytelling can improve students' both traditional writing skills and new literacy skills in disadvantaged regions.

Aim of the Study

This study aims to reveal the effects of digital storytelling in the third grade students' writing skills in rural areas. The first step of the study is to determine how digital storytelling develops the students' writing performances. Also, the digital storytelling and writing instruction process will be investigated in a detailed way with the help of observation and field notes, the interviews with students and teachers, audio and video recordings, student diaries, documents and student products. Therefore, the following research questions are posed:

1. How does the process of digital storytelling affect third graders' writing performances?
2. How is the development of quality in the digital stories designed by the students?
3. How does digital storytelling influence the process of narrative writing?

Research Design

The study adopted the action research design as one of the qualitative research techniques to reveal how digital storytelling function as a multimedia tool in writing instruction.

Action research is a cyclical questioning process which is carried out with stakeholders collaboratively in order to introduce and solve a certain problem related to classroom or school (Creswell, 2012; Sagor, 2005; Stringer, Christensen, & Baldwin, 2010; Yıldırım & Şimşek, 2008). Action research is not an experiment. It is conducted to reveal how something makes progress. The aim is to solve a problem, assess or find new ideas, and understand how it works (Johnson, 2014).

Many individuals and groups such as academics, teachers, parents, students and school managers might participate in action research (Creswell, 2012; Fraenkel, Wallen, & Hyun, 2012). In the current study, several stakeholders were included to introduce and solve the problem. The researcher collaborated with the school manager to do a feasibility study and facilitate the processes for the study. The researcher cooperated with the teachers on the preparation, application and review processes. Also, two academics (one of them study on literacy and the other study on instructional technologies) helped in the theoretical and practical aspects of the study by participating in two debriefings. Lastly, the students contributed greatly in the implementation of the action plan.

The action research processes suggested by the different researchers have some common processes such as statement of problem, preparation of action plan, data collection, collaboration with several stakeholders, and reflection in the process and repetition of the process cyclically. In this study, Sagor's (2005) following framework was used: clarifying vision, articulating theories, implementing actions and collecting data, and reflecting and planning informed action.

Clarifying Vision and Targets (What do I Want to Achieve?)

The earlier studies on digital storytelling have been designed to teach content areas in the courses such as science, mathematics and social studies so far (Dogan, 2012; Dogan & Robin, 2009; Hung et al., 2012; Robin, 2006; Sadik, 2008). The theoretical and experimental studies indicated digital storytelling as effective tools to teach content areas, and some researchers also revealed the significance of digital storytelling in the development of new literacy skills (Bumgarner, 2012; Davis, 2004; Foley, 2013; Frazel, 2010; Kajder, 2004; Kulla-Abbott, 2006; Lee, 2014; Ohler, 2008; Saunders, 2014; Sylvester & Greenidge, 2009). In the context of the previous studies, there is a dearth of studies which will scrutinize how digital storytelling can be benefited to develop the writing skills of socio-economically disadvantaged students.

Articulating Theories (What is the Best Approach to Achieve My Aims?):

New literacy theory and sociocultural theory established a basis for the design of digital story instruction but the programs of different researchers on the digital story instruction were also analyzed (Foley, 2013; Frazel, 2010; Jakes & Brennan, 2005; Kajder, 2004; Kulla-Abbot, 2006; Lambert, 2010; Ohler, 2008). Furthermore, the studies in the writing instruction were examined closely (Calkins, 1994; Graham & Perin 2007b; Graham & Harris, 2005; McKeough, Palmer, Jarvey, & Bird, 2007; Spandel, 2013; Tompkins, 2008). Considering all of these, a learning process was designed for digital story instruction.

Implementing Actions and Data Collection (Which Data Should I Collect to Clarify the Functioning and Efficiency of my Action Theory?):

School. In this study, one of the parameters to select the school was the technological opportunities such as internet and computer infrastructure. The students do not have much interaction with technology (There is no internet cafe in the village, and almost any of the students do not have computer and internet at home). In addition to these, the accessibility was another factor to select the school. Lastly, the teachers and the manager of the school were willing to cooperate when the aim and scope of the study were clarified, and they displayed positive attitudes toward the use of technology in education. The location of the village is approximately 25 kilometres to the city centre of Afyonkarahisar, and the population was circa 1000. The residents live by agriculture, breeding and construction works. There is only one school building in the village. Primary and secondary school use the same building. The number of the students at the primary school was 131 including the students at the nursery class. The primary school has four classrooms, and it serves as a double shift school. The teachers live in the city centre and travel every day to teach at the school.

Participants and Setting

The study was carried out over the course of the second semester of 2013-2014 academic years in a village. The number of the participants was 26 (16 female and 10 male students). More than half of the participants have three and over siblings. In terms of educational status of their parents, more than half of the fathers are primary school graduate, and they work as worker and farmer. The participants' mothers do not work, and more than half of them are graduated from primary school graduates. Three of the mothers are also illiterate.

Implementation Process

The school manager was interviewed and cooperated on the issues such as the aims and scope of the study. Then, some interviews were conducted with the primary school teachers, and the researcher introduced digital stories to the teachers by showing them a few digital story samples. The teachers were also provided with sample lesson plans and workbook. The digital story instruction was started in a collaboration of the researcher and the teachers. The applications were mostly implemented in the computer laboratory. In the laboratory, ten computers (eight of these were in-service) serve for the students, and one computer is left for teachers. Before the implementation, a computer technician examined whether the computers had sufficient technical and hardware properties or not, and the necessary maintenance and repair services were provided through a collaboration of the researcher, the school manager and the computer technician. Thus, the computers became ready for the study. In the laboratory, there were a small library, a teacher desk, a projector, and student desks (See Figure 1). The implementation went on throughout eight weeks on a basis of six hours a week. The stories were created by groups, pairs and individuals respectively. In the digital story making process, students worked through the following steps: preparation, drafting, revision, editing, storyboarding and gathering multimedia resources, producing, and sharing. In the step of producing was benefited from Photostory 3.



Figure 1. A Photo Taken in the Computer Laboratory

Data Collection Method and Process

Writing Performance

Writing quality, story components and writing lengths were considered to assess the students' narrative writings. To assess overall quality of the texts, "6+1 Writing Traits Rubric", developed originally by researchers in Northwest Regional Educational Laboratory (Grundy, 1986) and adapted into Turkish by Ozkara (2007) was used. The scale is comprised of seven sub factors: ideas, organization, voice, word choice, sentence fluency, conventions and presentation. The presentation sub factor was excluded in the current study. Furthermore, "Story Elements Rating Scale" which was developed originally by Harris and Graham (1996), and adapted into Turkish by Coskun (2005) was utilized to assess narrative texts in terms of the components of a story. The scale includes eight sub factors: main character, locale, time, starter event, goal, actions, ending and reaction. The texts were also assessed in terms of the length.

Quality of Digital Stories

"The Digital Story Assessing Rubric" was developed by the researchers and used to assess the quality of digital stories that are prepared by the students. In the development process, the features of digital stories in the literature (books, articles, etc.) were reviewed (Barrett, 2006; CDS, 2014; Demirer, 2013; Dogan, 2012; Frazel, 2010; Ohler, 2008; Robin, 2006; Sadik, 2008). In the rubric, twelve items were included. These were dramatic question, emotion, picture and videos, audios and music, novelty and creativity, economy, pacing, point of view, setting, characters, plot, and the aim of the story. The achievement levels of the students were determined as poor (1), needs to be developed (2), good (3) and excellent (4).

Observation and Field Notes

The researcher had an active role in the study. The teachers are the active observers of the instructional implementations. The instructors might observe the efficiency of their instructional activities and adjust their instruction accordingly (Mills, 2014). In the current study, the researcher took notes and captured videos during the writing instruction through digital stories, and the results of these observations were used as one of the main data sources. The researcher also filled in the observation form by analysing the video records.

Interviews

At the end of the procedures, a semi-structured interview was conducted to determine the perception and experiences of students and teachers related to the writing instruction through digital storytelling. Therefore, two different semi-structured interview forms were prepared for both teachers and students. The teachers were interviewed individually in an appropriate time, and the students were interviewed through three different focus group discussions with four students in each group. All these interviews were audio-recorded.

Documents and Student Products

Some important data sources such as student product portfolios and student works, photos, and video recordings might be important to understand the situations of the classroom (Mills, 2014). Therefore, the current study scrutinized images, lesson plans, texts and digital stories to understand the roles of digital stories in writing instruction.

Audio- and Video-Recordings

The use of audio- and video-recordings helps researchers to collect, store and analyse data (Fraenkel et al., 2012) so that a researcher might observe the case recurrently after the application without a time limitation and classroom noise (Koshy, 2005). In the current study, the researcher played the audio- and video-recordings repeatedly and benefited from them as the important data sources to understand how digital storytelling works in writing instruction.

Student Diaries

Student diaries might help a researcher to discover the students' world (Mills, 2014). In the current study, the students were requested to write what they feel and think after each in-class activity. After the procedures, the diaries were collected and used as significant data source in the analysis process.

Planning and Reflecting Informed Action (How Should I Plan My Future Actions [Instruction] Based on the Data?):

The action plan was revised with the researcher and other stakeholders by analysing video recordings, observation and field notes, and student products after each action. In this part, the data analysis and interpretation were described with the validity and reliability analyses.

Analysis and Interpretation of Data

Quantitative Data Analysis

In the quantitative part, the writing performance and the quality of digital stories were measured. The stories were marked by two researchers in order to determine the quality of writing and story elements with the help of “6+1 Writing Traits Rubric” and “Story Elements Rating Scale”. The interrater reliability measurements of the 6+1 Writing Traits Rubric were as follows at the beginning of the process: .86 for ideas, .87 for organization, .82 for voice, .90 for word choice, .91 for sentence fluency, .80 for conventions, and .89 for story elements. At the end of the process, the measurements for interrater reliability were as follows: .93 for ideas, .90 for organization, .80 for voice, .86 for word choice, .89 for sentence fluency, .92 for conventions, and .97 for story elements. These scores show that the 6+1 Writing Traits Rubric and Story Elements Rating Scale is highly reliable. Students' writing scores on their performances before and after the procedures didn't normally distribute. Therefore students' writing scores were analysed using Wilcoxon Signed Ranks Test.

Furthermore, “Digital Story Assessment Rubric” was used to assess the quality of the digital stories that are produced by the students, and the descriptive statistics such as percentage, frequency, and arithmetic means were presented. The digital stories were rated by two researchers. In the assessment of digital stories, the interrater reliability measurements were as follows: .86 for dramatic question, .93 for emotion, .98 for pictures and videos, .92 for audios and music, .95 for voice, .97 for novelty and creativity, .93 for economy, .94 for pacing, .91 for point of view, .85 for setting, .96 for characters, .96 for plot and .94 for the aim of the story. These scores illustrated that Digital Story Assessment Rubric is a highly reliable tool.

Qualitative Data Analysis

There is no single method for qualitative data analysis (Creswell, 2012-2013; Fraenkel et al., 2012; Glesne, 2012; Marshall & Rossman, 2011; Miles, Huberman, & Saldana, 2013). In spite of these different approaches in qualitative analysis, these researchers suggest some common principles such as coding, developing themes, and providing a visual diagram of the data (Creswell, 2013). The analysis steps of Creswell (2013) contain aspects of data management; reading and memoing; describing, classifying, and interpreting; and representing and visualizing data. These steps were taken as a basis in the current study.

Results

Research question 1: How does the process of digital storytelling affect third graders' writing performance?

Table 1. The Wilcoxon signed-rank test results regarding the students' writing quality scores on their performances before and after the procedures

Scores	Pretest-posttest	n	Mean Rank	Sum of Ranks	z	p
Ideas	Negative Ranks	0	.00	0	3.63	.00*
	Positive Ranks	14	7.50	105		
	Ties	12				
Organization	Negative Ranks	0	.00	0	4.18	.00*
	Positive Ranks	19	10	190		
	Ties	7				
Voice	Negative Ranks	0	.00	.00	1.73	.08
	Positive Ranks	3	2	6		
	Ties	23				
Word choice	Negative Ranks	0	.00	.00	2.44	.01*
	Positive Ranks	6	3.5	21		
	Ties	20				
Sentence fluency	Negative Ranks	0	.00	.00	3.35	.00*
	Positive Ranks	13	7	91		
	Ties	13				
Conventions	Negative Ranks	0	.00	.00	3.35	.00*
	Positive Ranks	13	7.00	91		
	Ties	13				
Total	Negative Ranks	0	.00	.00	4.12	.00*
	Positive Ranks	22	11.50	253		
	Ties	4				

$p > .05$

Students' writing quality scores were analysed before and after the procedures through Wilcoxon signed-rank test, and the results were presented in Table 1. The results revealed statistically significant differences between the students' pre- and post-test scores in terms of the quality of their stories. These differences were found in the sub-measures such as ideas, organization, word choice, sentence fluency and conventions while the any significant difference could not be found in terms of the voice ($p>.05$). In other words, students delivered better products in terms of ideas, organization word choice, sentence fluency and conventions at the end of the digital storytelling instruction.

Table 2. *The Wilcoxon signed-rank test results of the scores regarding the story elements before and after the procedures*

Scores	Pretest-posttest	<i>n</i>	Mean Rank	Sum of Ranks	<i>z</i>	<i>p</i>
Story Elements	Negative Ranks	0	.00	.00	3.94	.00*
	Positive Ranks	20	10.50	210.00		
	Ties	6				

$p>.05$

The elements in the students' stories were analysed before and after the procedures through Wilcoxon signed-rank test, and the comparative results of the test were given in Table 2. The results indicate statistically significant differences between the pre- and post-test scores in terms of the story elements ($p>.05$). The results revealed that the students developed their stories on the basis of story elements at the end of the digital storytelling instruction.

Table 3. *The Wilcoxon signed-rank test results of the scores regarding the word number before and after the procedures*

Scores	Pretest-posttest	<i>n</i>	Mean Rank	Sum of Ranks	<i>z</i>	<i>p</i>
Total Number of Words	Negative Ranks	6	14.08	84.50	2.31	.02*
	Positive Ranks	20	13.32	266.50		
	Ties	0				

$p>.05$

The Wilcoxon signed-rank test was conducted to compare the word number of the students as before and after the procedures, and the results were tabulated in Table 3. The results indicates a statistically significant difference between the pre- and post-test scores in terms of the word number ($p>.05$). The students developed better writings in terms of the word number at the end of the digital storytelling instruction.

Research question 2: How is the development of quality in the digital stories designed by the students?

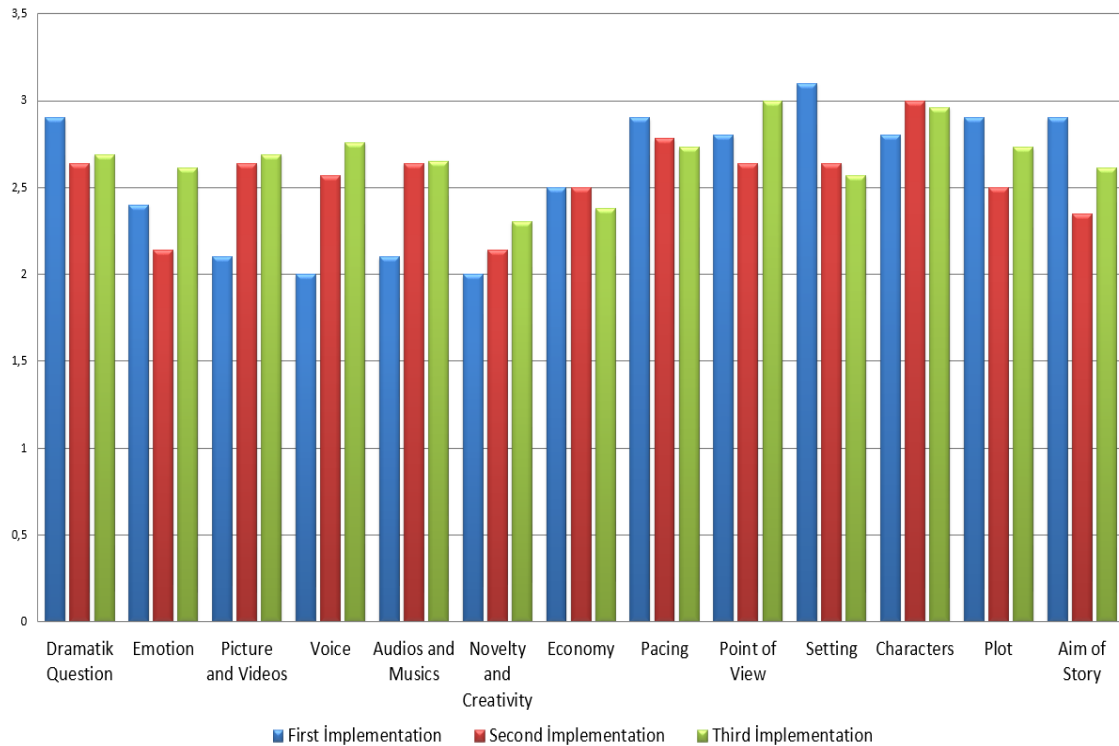


Figure 2. *The Development of Students' Digital Stories within the Procedures*

Students' developmental process in writing digital stories was visualized in Figure 2. Despite the fact that the first implementation process was a collaborative one, the students showed lack of displaying emotion, adding pictures and videos, voicing the story properly and integrating audios and music all of which is closely related to the technological literacy. In the second and third implementations, the participants showed progress with the development of their technological literacy and competences. The desired levels could not be achieved regarding novelty and creativity in three implementations. The plot of the stories remained at a basic level. The students elaborated their stories well in pair and group studies regarding the economy element, but the details in plots decreased in the individual studies. This situation could be observed explicitly through the number of pictures and the length of the stories in a comparison of group, pair, and individual studies. The number of pictures in group, pair and individual studies were 9.1, 7.3., and 6.1 respectively. Considering the length of stories, the time spans for group, pair, and individual studies were two minutes, one minute and forty seconds, and one minute and 20 seconds respectively. These results can be interpreted as the lack of elaboration in their individual stories. Regarding the pacing element, students could adjust the pacing of the stories in line with their plots.

The students told their stories from the third person viewpoint in group and pair studies while they told it from the first person viewpoint in individual studies because they improvised their life experiences. Although the details about the setting were written well in group stories, it is weakened in individual studies. The students designed their stories in three sections as introduction, body and conclusion, and then solved the problem stated by them. Lastly, the students were able to identify the main idea of their stories in group and individual studies, but pair studies were not successful at identifying the main idea.

Research Question 3: How does the Digital storytelling affect the process of narrative writing?

Writing Strategies

The writing strategies is the first emerging theme to reveal how digital storytelling and narrative story writing processes work. It is a key concern how the students changed their writing strategies in traditional writing process through computer and internet.

Planning

Writing plans aimed to determine the students' aim, subject, audience and writing genre. The students were observed not to have knowledge on preparing writing plans. In the last implementation, the students used to have aims such as entertaining audience, watching out for stray dogs, doing a favour for people, young children's avoidance to go out alone and memorizing the phone numbers of family members. The audience of the stories was all children, the children who have fallen from balconies, lost children, the ones who have not gone to Afyonkarahisar, families, classmates and teachers. Thus, the students learned that they should prepare a writing plan before writing and writing is a process which starts with planning. Also, the students developed awareness for defining aims, and they widened their audience owing to the internet.

Generating idea

To investigate the students' awareness regarding the writing process, the following questions were posed: (i) "what do we do before and during the writing?" The students' answers to these questions revealed the lack of awareness in the writing process. Then, students were asked to the brainstorming about the subject of their writing. The students were observed to activate their previous knowledge on the subject. As a result of the brainstorming activities, the students wrote down some keywords related to the space subject such as rocket, astronaut, planets, UFO, research and alien. These words became one of the main data sources in their stories. The students' views on the use of these words were reflected in the following excerpt:

Researcher: What do we do before writing, children?

Esma: Preparation.

Researcher: What can we do in the preparation process? What do you see when we turned the page to 4?

Memduh: Brainstorming...

Researcher: Then, why do we need to do brainstorming in the preparation process?

Fadile: To find the words inside, Sir!

Researcher: The words inside what?

Fadile: The words related to our subject.

Researcher: So, what is the other reason to do brainstorming?

Sonnur: To think on something.

The students were informed on the KWL strategy and its effective use to inquire about a subject. The students raised awareness to do research on a subject before starting to write. They also started to learn how to reach the information by using search engines. They accessed some information from the internet such as the ways to go to the space, the names of the planets, the phases of the moon, spaceship, and the appearance of a rocket. The

information obtained from the internet contributed to the students to generate and expand the content of stories.

Mrs. Ali (Teacher): Children, we have carried out some searches in recent weeks. How would we do research?

Akile: Through computers.

Researcher: Yes, we have done search through computers. What have we used to do search?

Sena: Google.

Researcher: Google, isn't it? We have done search through using the internet. So, what is the internet and how does it serve for us?

Şerafettin: Sir, we can reach any kind of information.

The students were asked to write their ideas and feelings on space, planets, and stars unceasingly for 10 minutes. The keywords regarding the content of their stories were as follows: seeing an UFO, going to the space, meeting aliens, flying in the vacuum of space, visiting planets, seeing stars up close, and analysing meteors. These imaginations, ideas and feelings functioned as a vital source to shape their stories.

Organizing ideas

The students were asked what kind of components should be included in a narrative text. A discussion was carried out on the story elements including characters, environment, problem, plot, main idea and conclusion. The previously watched story was regarded as a basis to discuss the components of a story. Then, the students were reminded to create graphic organizers based on these components before starting to write. The students visualized their stories with the help of graphic organizers.

Revising

In this instruction process, the students learned that the first version of a text is regarded as a draft and writing can be developed cyclically. Therefore, the students first developed their drafts in terms of the features of characters, the properties of environments, plot and the use of conjunctions.

In the second part, the students divided their stories into the parts while preparing storyboards, and they gave names and drew small pictures for each part. They comprehended the sequence of the actions in their stories owing to storyboards. The students were asked "Is there any picture that you want to add while preparing your storyboard?" and "Is there any text that you want to add?" so that they learned how to expand their stories. Some students expanded their stories by adding pictures and texts with the help of storyboards.

In their digital storytelling experience, the students benefited from a free software named Photostory 3 developed by Microsoft to digitalize their stories. While vocalizing their stories through the software to make storyboards, they were able to re-listen to their stories with the preview option. At the same time, they rechecked the flow of the events in their stories and determined the discrepancies in text structures. They edited if there are some parts to be added or removed. They were able to develop the plot as they listened again. Thus, the students continued to raise awareness the cyclical nature of writing.

Editing

The lack of editing strategies was clearly observed. The students both improved spelling rules and punctuation and the self-assessment abilities. They started to learn why they should edit their texts and what kind of editing they should do. The students realized their spelling and punctuation mistakes in their first storyboards, and they edited these mistakes in their second ones. The editing process also helped students understand the cyclical nature of writing. This situation reflected in the following conversation between a student and the teacher:

Researcher: What do we check after writing and drafting a text, children?

Sena: The things we have written.

Researcher: What aspect of our writing?

Şeyda: For example, full stops...

Researcher: Alright! We check punctuation marks.

Şeyda: Did I start with capital letters after full stops?

Researcher: What else?

Sonnur: Did I pay attention to the paragraphs?

New Literacy

Three sub-themes emerged under the effect of digital stories on the new literacy skills and perceptions: the perception of new literacy, the competence for new literacy and the skills of new literacy.

The perception of new literacy

Due to the procedures through digital stories, the students started to raise awareness about the perceptions related to the new literacy. These perceptions were in regard to: (I) computers can be used for information retrieval and educational purposes, (II) students can record their voices, (III) stories are not just written texts but they can be created digitally by integrating multimedia such as pictures, videos and audios, (IV) the multimedia such as audio, video, music and picture can be stored in digital environments, (V) these can be uploaded to the internet, and (VI) the students can communicate with the other parts of the world through internet. The students and the teachers expressed these perceptions in the interview as follows:

They even do not know if they can speak to microphone and record their voice (Teacher Mrs.Ayşe)

They experienced that computers can be used to do research for educational purposes. (Mr. Ali)

Sena: Sir, I didn't know Google beforehand.

Researcher: So, what is Google?

Burak: Internet.

Researcher: What do we do with Google?

Burak: We do search. Sir, there is "e". You click on it. A long page appears. You write what you will search.

Akile: If you want to see images, you click on it.

The competence for new literacy

At the beginning of the study, the students were not aware of multimedia learning environments, and they did not have basic computer skills. Therefore, they used to feel themselves incompetent and strange. For instance, they experienced difficulties in new literacy skills in the first application such as vocalization, pictures videos and so on. Teacher Mrs. Ayşe (Teacher) expressed her opinions on the situation:

At the first times, the students were worried about vocalization. Then, in the second application, they were eager for vocalization.

At the beginning, they felt the lack of knowledge. Your words seemed to be strange to them. They felt themselves incompetent.

On the other hand, the competence perceptions of the students regarding the new literacy increased gradually with the help of group, paired and individual studies. Particularly, even low-level students were able to reveal products at the first attempt through group work, and this increased their competency. The students were living in a rural area so they were displaying shyer behaviours in the activities about technology use. Furthermore, the female students used to feel that they were not capable of doing something, but they overcame this feeling owing to the procedures. Therefore, the shy behaviours can be overwhelmed through digital stories in rural areas. Mrs. Ayşe's opinions were in line with this conclusion:

They improved self-confidence. Due to its being a rural area, the children feel shyer and stranger. They started to think that they were able to achieve something. Creating a product made them happy. There were significant effects in terms of shyness. At the beginning, it was so abstract for the students. When they created a product, their viewpoints have changed. Specifically, the female students overcame the prejudice of being incompetent.

The skills of new literacy

The students improved their basic computer skills such as searching from the internet, using audio, pictures and music, and preparing digital stories throughout the procedures of digital storytelling. The students developed, in particular, basic technological literacy skills such as audio recording, turning on and off computers, and using the hardware like mouse, headphones, microphone and keyboard. This development reflected in the interview with Mr. Ali (Teacher):

They perform vocalization on the pictures after uploading them to the computers. It is a golden opportunity for students to record their voice through vocalization. They choose their own music. In other words, they do not just write stories. We give them many skills at the same time. Of course, we give them in a process but they get good skills.

The searching activity is carried out in the preparation step of writing process, and this activity was carried out through the internet instead of printed materials. KWL strategy was taught as a searching strategy. At the beginning of the procedure, the students had limited knowledge about the to-do-lists in the preparation step of the writing process. KWL strategy was introduced to the students, and the strategy was reminded to be used in the implementation of search.

The students wrote down what they know about trees and jungles. Then, they converted what they are curious of the question form. The teacher modelled a sample search from the internet and indicated how to access the related internet page by writing the question of "What would happen if trees do not exist?" in the search engine box. The students started

to query their questions by using the search engines. The students were informed that many results would emerge as a result of their query and they would find the information regarding their queries. They learned about the subjects such as the animals in the jungle and planting a tree. Some of the students used this information in their stories. Also, they were informed that websites do not always give correct information and they should search their queries in more than one search engines. Thus, the students started to widen their horizons through the use of the internet. In the second procedure, the students carried out a similar research on the subject of space. Then, they wrote down the questions related to space. To answer these questions, they used the search engines and learned about space, going to space, spaceships and life in space. These learning experiences helped them elaborate and expand their stories. This was reflected in the interviews with the students and the teachers:

Computers were not used extensively beforehand. They were used a few times. But now I am sure that they can search and find information by querying in Google when they are alone. I am sure they can find something through computers in their second or third try even they cannot find something in their first try. (Mrs. Ayşe)

For instance, we searched the life of Atatürk from the internet. (Nadir)

We can write our questions to Google and search whatever we want. (Sena)

The students were reminded that they can draw their own pictures for their digital stories or find them from the internet. They were taught on how they find pictures or images through the search engines. The students found some parts of their stories through search engines and saved them to use in their stories. To give some examples, these pictures or images were planets, sun, world, space, alien, spaceship, astronaut and the phases of moon. Also, the students learned some of the subjects they do not know through the image section of search engines. For instance, they benefited from the image section of search engines to learn about spaceships, rocket and Mars. Briefly, they expanded and elaborated their stories by means of the images section of search engines. This situation reflected in the interaction between the students and the teacher:

Researcher: What did you do in this picture, Sonnur? Did you draw it yourself or find it from the internet?

Sonnur: Through the internet.

Researcher: You found it from the internet. So, how do we find it from the internet?

Memduh: Sir, we were opening the images.

Researcher: What was the name of our search engine?

Memduh: Google.

Researcher: We click on Google and then click on the images. For instance, which images would you like to search?

Memduh: The moon.

Tayyar: The space.

Furthermore, Sonnur reflected her opinions in her diary:

The story has already finished. We headed for pictures and images. I found 7 photos from the internet. And, there was one assignment. The teacher told us to draw the pictures in the storyboards. I drew the pictures. We, two people, use one computer. My friend will also draw pictures. I wonder how s(he) will draw the pictures. First, I introduced Berkay. Then his family and I draw the picture of the space.

Community of Learners

The students became role models for each other in their group and paired works with regard to writing skills, strategies and the skills for new literacy. The students developed several skills by observing and imitating each other. In the collaborative works, they felt more free and behaved comfortably. They designed their writing process from the group works to the individual work, and this helped the students to gain self-confidence step by step. The students who have self-confidence related difficulties to perform their duties improved their self-confidence with the help of collaborative works. At the first study, the final product motivated the students as a member of a group. Furthermore, the students helped each other in group, paired, and individual works. These helps were in the phases such as converting a story into the digital format, drafting a story, and editing a story.

On the one hand, the students felt the responsibility for the final product and the works of the other group members since they presented a final product as a group. On the other hand, it seems easier to study collaboratively due to the distribution of the tasks. Students shared the task. For example, one student was making storyboards and the other was drawing the pictures, and they achieved their assignments based on their objectives. After encouraging the students for interaction, the students were observed to encourage each other in the discussions and they provide scaffolding to each other. Also, the students had fun in their group works.

Motivation

According to the results, the digital story practices increased the students' willingness to participate in the writing activities. The students did not use to interact with internet and computers in their daily lives and the school, and they used to be taught in a traditional classroom environment. However, the use of computers and the internet increased their ambition and encouraged students to participate in the steps of writing process actively. Before the procedures, some students were procrastinating their writing assignments or refuse to write, but with the help of designing digital stories these students showed their enthusiasm to participate in the writing process.

The students also realized their digital stories embedded with pictures, music and audios can be watched in different environments through the internet rather than the traditional stories with paper and pen. This was another factor which affects their willingness in the digital story writing process.

The students participated in the three procedures in total, and each student improvised three digital stories in this process. The more different media elements they put on their digital stories, the more ambitious they became in the subsequent digital story because the students enjoyed to have a final product including their own voice, own pictures and own music and they watched it with their friends. As they believed they improved their subsequent digital stories, their motivation was higher than the previous one. These stories will be theirs as a memory as they can able to watch them again in the future. This idea encouraged the students to do their best for the next digital story.

Discussion and Conclusion

Writing Performance and Digital Storytelling

The findings of current study indicated that digital storytelling enhanced students' ideas, organization, word choice, sentence fluency, and conventions in terms of writing quality. Similarly, digital storytelling improved story elements such as problem, setting, characters, and plot. In the end of the procedures, students' stories were more detailed in terms of word count. Digital storytelling serves as a tool in the process of self-writing (Davis, 2004). They provide authorial stances for students to construct a literacy identity within the context of home and school. Apart from writing, they change the formation of a composition by expanding its processes. Texts become stronger and more complicated through digital storytelling, and the digital story makers become able to write for a wide range of audiences with the help of their communication competences and the ability to share their stories (Vasudevan et al., 2010).

Many studies have been carried out to reveal how digital storytelling develop the writing skills, and the results of the current study corroborate with the others (Bogard & McMackin, 2012; Bumgarner, 2012; Campell, 2012; Dogan, 2007-2012; Foley, 2013; Kulla-Abbott, 2006; Skinner & Hagood, 2008; Sylvester & Greenidge, 2009; Stojke, 2009; Vasudevan et al., 2010; Xin, 2013). In Kulla-Abbott's (2006) study, digital storytelling helped students comprehend the organization of stories with the processes of reflection, drafting and feedback. In Foley's (2013) study, the first and second grade students learned to write in a sequential way, to elaborate events and characters, to use conjunctions for the expression of events, and to write a conclusion for their stories. Furthermore, they developed awareness on the selection of their words with the help of digital stories. Considering the aforementioned issues, digital storytelling help students create more comprehensive and more detailed texts by developing the quality of their writing, word counts, and story elements.

The Development of the Quality in Digital Stories

In the procedures of this study, the students not only have strengthened their technological literacy and competences but also have had a significant progress in terms of the affective domain of stories, the embedment of images into the different parts of their stories, the consistency between images and vocalization, the vocalization of the stories adequately, and the integration of proper audios. Most of the students decided on an adequate emotion for their stories, added illustrations by dividing their stories into sections, vocalized their stories in line with the aim and emotion of their stories, and added adequate background music. The students were able to build up their stories in an appropriate pacing. To sum up, the third grade students in rural primary schools created their digital stories by blending multimedia resources such as images, audio, and music. Therefore, digital storytelling can be proved as an effective tool to develop the writing skills of primary school students with the help of their teachers. The previous studies with the students at primary schools indicated that they were able to prepare digital stories by blending a range of multimedia resources with traditional reading and writing skills (Bogard & McMackin, 2012; Dogan, 2012; Foley, 2013; Sylvester & Greenidge, 2009; Vasudevan et al., 2010). In Dogan's (2012) study, creating digital stories was easier for the students at primary schools rather than the other groups. In other words, younger teenagers tend to accept technological tools and master on them. The current study proves these results. Considering the fact that the current study aimed to help the third graders in rural areas create digital stories, the

students, who had low-level technology literacy and competences, increased the qualities of their digital stories in terms of emotion, pictures, vocalization and music, and they adapted themselves to the digital aspects of their stories.

Digital Storytelling and Writing Process

Sociocultural theory puts the social context into the epicentre of learning and communication process. According to Vygotsky, it is difficult to understand human learning without critically important social and cultural domains (Barnard & Campell, 2005). The sociocultural theorists emphasize the need for guided participation and practices. Thus, the expertise is distributed, practiced and shaped to create a product (Englert et al., 2006). In the current study, the students discussed and modelled writing strategies, and engaged in dialogues. The researcher and the teachers also helped the expert students to interact with the beginner ones. Thus, the students benefited from the expertise of their teachers and peers on the strategies for autonomy, and they showed a gradual progress.

Over the course of digital story making process, the students had an understanding of the need to create a scheme including the aim, subject, audience and the type of the text. In the implementation processes, the students expanded their audience with the help of the perception that digital stories can be delivered to the different locations in online environments, and they became aware of their aims.

In today's world, it is very critical to understand the authorship of writers and readers, and the relationship between them. The target audience of writers consists of a larger population instead of an abstract and limited audience as in the traditional reading and writing settings (McGrail & Davis, 2011). The digital story making process fosters the sense of discourse in relation to the target audience. The students learn to consider who they are writing for and why they write stories during digital story making process. Thus, students endeavour to develop and expand their stories by keeping the audience in their minds (Foley, 2013; Kulla-Abbott, 2006). Similarly, several studies indicated that digital stories expanded the target audience (Foley, 2013; Sylvester & Greenidge, 2009; Vasudevan et al., 2010).

The students realized the perception that they can edit many times, delete and develop their written texts over the course of preparation, drafting, editing, storyboarding and production. Storyboards and audio-recording, which pertain to the digital story making process in particular, encouraged students to understand the cyclical nature of writing. The students comprehended the sequence of the events in their stories owing to the storyboards. In certain steps, the students expanded and changed their storyboards by adding pictures and texts. They were able to listen to their digital stories again and again through preview option, and this provided them with the opportunity to check and revise the flow of their stories.

The repetitive nature of writing came out with the digital story making process (Kulla-Abbot, 2006; Ranker, 2008). In the phase of storyboards, students think over the content of their writing and draft-edit their stories. Also, students use the advantage of audio-recordings to elaborate and vocalize their stories (Bogard & McMackin, 2012). Due to storyboards, students comprehend the plot better, and they raised awareness on the details and transition of the events (Bogard & McMackin, 2012; Sylvester & Greenidge, 2009).

In this study, the students heightened their new literacy perceptions. For instance, they learned to record their voice to the computers. Also, they found out that texts can be formed

not only by writing but also by blending audio, video and images. They became aware of the fact that the data such as audio, video and images can be moved and stored through the digital media. The students realized the opportunities of the internet to communicate and exchange information with the other people in the world. The awareness of digital stories widened their perceptions regarding the literacy.

Electronic technologies have been changing the way people communicate and give a meaning to the world. They will continue to change the nature of literacy and the necessary cognitive and social skills for literacy (Bromley, 2006). Electronic technologies force students to be writer and producer instead of reader and consumer. Computers provide an opportunity for students to write in new text types ranging from classroom bulletins to e-mail projects, blogs and online magazines (MacArthur, 2006; Ohler, 2006). According to Kajder (2004), digital stories clearly widen the students' understanding of literacy.

At the beginning of the study, the students felt the lack of new literacy skills due to the limited opportunities to interact with the multimedia. The new literacy competences of the students built up over time with the help of group, paired and individual digital story making processes. The female students were displaying shy behaviours than the male students did, but their new literacy competences were observed to increase owing to the digital story procedures. From this aspect, the results can be interpreted as a sign of the increase in the students' new literacy competences. In a similar study by Davis (2004), the students demonstrated the competences on several technical tools as a part of digital story making process. In Ranker's (2008) study, even the students who have not used video-editing software might become competent and interested in the use of the digital technologies.

The students made progress in the new literacy skills such as technology, information and visual literacies over the course of digital story procedures. The students developed their basic technology literacy in terms of using the internet, utilizing images and music, recording voice, turning on and off computers, using hardware such as mouse, keyboard, headphone and microphone, and opening, closing, moving and saving a file. They internalized how to access information from the internet and process it. Furthermore, they learned to search the images from search engines, and these images provided them with the opportunity to expand their stories. In all of these processes, the students showed a progress in the visual literacy. The current study is in line with the other studies on the result that digital storytelling tend to develop the new literacy skills (Dogan, 2007; Dogan, 2012; Dogan & Robin, 2009; Demirer, 2013; Foley, 2013; Green, 2011; Husband, 2014; Kulla-Abbott, 2006; Lee, 2014; Xin, 2013).

Nowadays, students should have multi-literacy skills to access all texts including traditional texts, visuals and hypertexts (Thesen & Kara-Soteriou, 2011). Digital storytelling amplifies literacy by integrating traditional and new literacy skills (Kajder, 2004; Ohler, 2013; Robin, 2008; Skinner & Hagood, 2008). The previous studies scrutinized the use of digital storytelling in the rural areas and revealed some results on how these can be used in these areas with limited technologic interaction (Duveskog, Tedre, Sedano, & Sutinen, 2012; Gyabak & Godina, 2011). For instance, Duveskog et al. (2012) carried out a study with the primary school students in the rural areas of Tanzania, and their participants found the opportunity to enlarge their audience through internet and share their stories with global community. On the one hand, the students developed their computer skills; on the other hand, they became motivated when they created their stories in multimedia forms and

realized that they were being followed by a larger audience. According to the results of the current study, the digital storytelling expanded the rural area students' new literacy perceptions and new literacy competences, and they contributed to new literacy skills such as technology, information and visual literacies. Thus, the current study indicated that digital storytelling can serve as a tool to decrease the digital divide.

In the implementation process of digital stories, a community of learners emerged in the classroom. The students were role models to the each other with regard to writing strategies and skills, and new literacy competences due to their interactions within the classroom. The group works increased the students' competences to use computers. The recent studies also shows consistency with the results of the current study that digital stories increase the interaction within the classroom environment (Kulla-Abbot, 2006; Lee, 2014; Slyvester & Greenidge, 2009; Smeda, Dakich & Sharda, 2014). "More reading and writing will be electronic, collaborative, and social." (Bromley, 2012, p. 8). The opportunities provided by information and communication technologies underline the social and cultural aspects of reading and writing skills of individuals. According to sociocultural theory, students struggle collaboratively to create a digital story in a classroom established as a social interaction environment. As long as students write new stories and learn new tools in such an environment, they will be in interaction or communication with their peers and teachers (Kulla-Abbott, 2006). The multimedia components in the digital story making process reinforce collaboration and active learning. The students' collaboration and their presence in an active environment contribute to them to be more productive in their writing (Slyvester & Greenidge, 2009). Also, Vasudevan et al. (2010) revealed that the students who used to write alone without the help of their peers can participate in digital story activities and their community of learning much more.

Digital storytelling enhanced the students' motivation in terms of the participation to the writing process. In the earlier times, the students used to interact with internet and computers slightly but, after the implementations, their interaction strengthened their desire to attend writing processes. The students who used to procrastinate beforehand were involved in the writing processes actively. Another factor behind their motivation was the idea that they can disseminate their studies in digital environments and their digital stories can reach to the different environments through internet. In line with the results of the current study, the other studies also revealed increases in the students' motivation with the help of digital stories (Bumgarner, 2012; Dogan, 2007-2012; Dogan & Robin, 2009; Duveskog et al., 2012; Foley, 2013; Kahraman, 2013; Sylvester & Greenidge, 2009; Vasudevan et al., 2010; Xin, 2013). Considering the aforementioned results, digital stories play a significant role to increase the students' desire to participate in the writing activities. The students' active participation in digital literacy make them more ambitious and more curious (Bumgarner, 2012). Digital storytelling motivates students to elaborate and expand their stories by enlarging their audience (Foley, 2013; Hett, 2012; Sylvester & Greenidge, 2009; Vasudevan et al., 2010). Foley (2013) also revealed that the multiform nature of writing motivates the children with writing difficulties. In Vasudevan et al.'s (2010) study, one of the students, Michael was resisting to the academic studies as an unwilling student but he learned the new technology at a fast pace and became a story writer by leading his friends in technologic issues.

Conclusions

Digital storytelling offer new opportunities for the students to create meaning through multimodal texts, comprehend the nature of multiform texts and develop their technology, information and visual literacies. Therefore, the digital stories might be utilized effectively by the teachers in low-level socioeconomic areas to prevent from the digital divide. Some earlier studies indicate a gap between the students from low and high level socioeconomic status in relation to their interactions with information and communication technologies. The students from high socioeconomic environments benefit from the new literacy practices more (Leu, Forzani & Kennedy, 2015; Leu et al. 2014; Li & Ranieri, 2013; Turkey Statistical Institute 2013). To teach the new literacy skills to the younger children, it is highly recommended to integrate new literacies into classroom instruction especially for the students with economic disadvantages (Forzani & Leu, 2012). Considering all these, a digital divide can be clearly observed in terms of the new literacy skills between the students from disadvantaged socioeconomic areas and the students with high socioeconomic status to overcome this digital divide, the activities regarding online reading and digital writing should be employed and effectuated with the students at disadvantaged areas.



References

- Annie E. Casey Foundation, (2010). *Early warning! Why reading by the end of third grade matters*. Baltimore: AECF. Retrieved from <http://datacenter.kidscount.org/reports/readingmatters.aspx>.
- Arıcı, A.F., & Urgan, S. (2008). İlköğretim ikinci kademe öğrencilerinin yazılı anlatım çalışmalarının bazı yönlerden değerlendirilmesi [An evaluation of secondary school students' writing mistakes with respect to some points]. *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi*, 20, 317-320.
- Banaszewski, T. (2002). Digital storytelling finds its place in the classroom. Information Today. Retrieved 2014 from <http://www.udel.edu/present/aaron/digitalstory/Readings/Digital%20Storytelling%20Finds%20Its%20Place%20in%20the%20Classroom.pdf>.
- Barnard, R., & Campbell, L. (2005). Sociocultural theory and the teaching of process writing: The scaffolding of learning in a university context, *The TESOLANZ Journal*, 13, 76-88.
- Barrett, H. (2006). Researching and evaluating digital storytelling as a deep learning tool. In C. Crawford, et al. (Eds.), *Proceedings of Society for Information Technology and Teacher Education International Conference 2006* (pp. 647-654). Chesapeake, VA: AACE.
- Bereiter, C., & Scardamalia, M. (1987). *The psychology of written expression*. Hillsdale, NJ: Erlbaum.
- Bimber, B. (2000). Measuring the gender gap on the internet. *Social Science Quarterly*, 81(3), 868-876.
- Bogard, J. M., & McMackin, M. C. (2012). Combining traditional and new literacies in a 21st. century writing workshop. *The Reading Teacher*, 65(5), 313-323.
- Bromley, K. (2006). Technology and writing. In M. McKenna, L. D. Labbo, R. D. Kieffer, & D. Reinking (Eds.), *International handbook of literacy and technology* (Vol. 2) (pp. 349-355). Mahwah, NJ: Lawrence Erlbaum.

- Bromley, K. (2012). "The future of reading and writing." In (Eds.) J. Cassidy, S. Grote-Garcia, E. Martinez, & R. Garcia. *What's hot in literacy 2012 yearbook* (pp. 4-9). San Antonio, TX: The University of the Incarnate Word. Retrieved from http://www.texasreaders.org/uploads/8/6/6/5/8665759/literacy_summit_yearbook_2012_-_final.pdf.
- Bumgarner, B.L. (2012). *Digital storytelling in writing: A case study of student teacher attitudes toward teaching with technology* (Doctoral Dissertation). Retrieved from ProQuest LLC (3533990).
- Campbell, T., (2012). Digital storytelling in an elementary classroom: Going beyond entertainment. *Procedia - Social and Behavioral Sciences*, 69, 385-393.
- Calkins, L. M. (1994). *The art of teaching writing*. Portsmouth, NH: Heinemann
- Coiro, J., Knobel, M., Lankshear, C., & Leu, D. J. (2008). Central issues in new literacies and new literacies research. In J. Coiro, M. Knobel, C. Lankshear, & D. J. Leu. (Eds.), *The handbook of research in new literacies* (pp. 1-22). Mahwah, NJ: Lawrence Erlbaum.
- Cooper, M. (2004). *Expanding the digital divide and falling behind on broadband: Why telecommunications policy of neglect is not benign*. Washington, DC: Consumer Federation of America. Retrieved from <http://www.consumerfed.org/pdfs/digitaldivide.pdf>.
- Coşkun, E. (2005). *The cohesion, coherence, and text elements in the narrative texts of elementary school students*. (Doctoral Thesis, Gazi University Institute of Educational Sciences, Ankara, Turkey). Retrieved from <https://tez.yok.gov.tr/UlusalTezMerkezi/>.
- Creswell, J.W. (2012). *Educational research: Planning, conducting and evaluating quantitative and qualitative research*. Boston, MA: Pearson.
- Creswell, J.W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Thousand Oaks, CA: Sage.
- Davis, A. (2004). Co-authoring identity: Digital storytelling in an urban middle school. *THEN: Technology, Humanities, Education, & Narrative*. Retrieved from <http://thenjournal.org/index.php/then/article/view/32/31>.
- Demirer, V. (2013). *Use of e-storytelling in primary education and its effects*. (Doctoral Thesis, Necmettin Erbakan University Institute of Educational Sciences, Konya, Turkey). Retrieved from <https://tez.yok.gov.tr/UlusalTezMerkezi/>
- Dogan, B. (2007). *Implementation of digital storytelling in the classroom by teacherstrained in a digital storytelling workshop*. (Doctoral Dissertation). Retrieved from ProQuest LLC (3272583)
- Dogan, B. (2012, March). Educational Uses of Digital Storytelling in K-12: Research Results of Digital Storytelling Contest (DISTCO) 2012. In *Society for Information Technology and Teacher Education International Conference* (Vol. 2012, No. 1, pp. 1353-1362).
- Dogan, B., & Robin, B. (2009). Educational uses of digital storytelling: Creating digital storytelling contests for K-12 students and teachers. In Gibson et al. (Eds.). *Proceedings of society for information technology and Teacher Education International Conference 2009* (pp.633-638). Chesapeake, VA: AACE.
- Duveskog, M., Tedre, M., Sedano, C. I., & Sutinen, E. (2012). Life Planning by digital storytelling in a primary school in rural Tanzania. *Educational Technology & Society*, 15 (4), 225-237.
- Englert, C. S., Mariage, T. V., & Dunsmore, K. (2006). Tenets of sociocultural theory in writing instruction research. In C. A. MacArthur, S. Graham & J. Fitzgerald (Eds.), *Handbook of writing research* (pp. 208-221). New York: Guilford.
- Englert, C. S. (1992). Writing instruction from a sociocultural perspective the holistic, dialogic, and social enterprise of writing. *Journal of Learning Disabilities*, 25(3), 153-172.

- Foley, M.L. (2013). *Digital storytelling in primary-grade classrooms* (Doctoral Dissertation). Retrieved from ProQuest LLC (3560250).
- Forzani, E., & Leu, D. J. (2012) New literacies for new learners: The need for digital technologies in primary classrooms, *The Educational Forum*, 76(4), 421-424.
- Fraenkel, J., Wallen, N., & Hyun (2012). *How to design and evaluate research in education*. New York: McGraw-Hill
- Frazel, M. (2010). *Digital storytelling: Guide for educators*. Eugene, OR: International Society for Technology in Education (ISTE).
- Glesne, C.(2012). *Nitel araştırmaya giriş* (A.Ersoy ve P.Yalçınoğlu, Trans.) [Becoming qualitative researchers: An introduction (4th ed.)]. Ankara: Ani.
- Grundy, T. (1986). The writing program in the Beaverton School District. *Oregon School Study Council Bulletin*, 30(2), 1-43.
- Graham, S., & Harris, K. R. (2005). *Writing better: Teaching writing processes and self-regulation to students with learning problems*, Baltimore: Brookes.
- Graham, S., & Perin, D. (2007a). A meta-analysis of writing instruction for adolescent students. *Journal of Educational Psychology*, 99, 445-476.
- Graham, S., & Perin, D. (2007b). *Writing Next: Effective strategies to improve writing of adolescent middle and high school*. Washington, DC: Alliance for Excellence in Education.
- Green, M.R. (2011). *Teaching the writing process through digital storytelling in pre-service education* (Doctoral Dissertation). Retrieved from ProQuest LLC (3471214).
- Gyabak, K., & Godina, H. (2011). Digital storytelling in Bhutan: A qualitative examination of new media tools used to bridge the digital divide in a rural community school. *Computers & Education*, 57(4), 2236-2243.
- Harris, R. K. & Graham, S. (1996). *Making the writing process work: Strategies for composition and self-regulation*. Cambridge, MA: Brookline Books.
- Hathorn, P. P. (2005). Using digital storytelling as a literacy tool for the inner city middle school youth. *The Charter Schools Resource Journal*, 1(1), 32-38.
- Hayes, J. R. (1996). A new framework for understanding cognition and affect in writing. In C. M. Levy & S. Ransdell (Eds.), *The science of writing: Theories, methods, individual differences, and applications* (pp. 1-27). Mahwah, NJ: Lawrence Erlbaum.
- Hayes, J. R., & Flower, L. S. (1980). Identifying the organization of writing processes. In L. W. Gregg & E. R. Steinberg (Eds.), *Cognitive processes in writing: An interdisciplinary approach* (pp. 3-30). Hillsdale, NJ: Lawrence Erlbaum.
- Hett, K (2012). Technology-supported literacy in the classroom: Using audiobooks and digital storytelling to enhance literacy instruction. *Illinois Reading Council Journal*, 40(3), 3-13.
- Hoffman, D. L., & Novak, T. P. (1998). Bridging the racial divide on the Internet. *Science*, 280, 390-391.
- Hung, C. M., Hwang, G. J., & Huang, I. (2012). A project-based digital storytelling approach for improving students' learning motivation, problem-solving competence and learning achievement. *Educational Technology and Society*, 15(4), 368-379.
- Husband, T. (2014). Using digital storytelling to develop 21st century skills and literacies in early childhood teacher education. *Gausius*, 2, 1-16. Retrieved from <http://sotl.illinoisstate.edu/downloads/gausius/HusbandVolume2.pdf>.

- Jakes, D. S., & Brennan, J. (2005). Capturing stories, capturing lives: An Introduction to digital storytelling. Retrieved from <http://www.jakesonline.org/dsttechforum.pdf>.
- Johnson, A.P. (2014). *Eylem araştırması el kitabı*. (Y.Uzuner ve Meltem Ö.Anay, Trans.) [A short guide to action research.] Ankara: Anı.
- Kahraman, Ö. (2013). *The effect of using teaching materials prepared by digital storytelling method at the engagement phase of learning cycle on physics course achievement and motivation level*. (Doctoral Thesis, Balıkesir University Institute of Science, Balıkesir, Turkey). Retrieved from <https://tez.yok.gov.tr/UlusalTezMerkezi/>.
- Kajder, S. B. (2004). Enter here: Personal narrative and digital storytelling. *English Journal*, 93(3), 64-68.
- Koshy, V. (2005). *Action research for improving practice: A practical guide*. London: Paul Chapman.
- Kulla-Abbott, M. T. (2006). *Developing literacy practices through digital storytelling*. (Doctoral Dissertation). Retrieved from ProQuest LLC (3285640).
- Lambert, J. (2010). *Digital storytelling cookbook and traveling companion*. Berkeley: Digital Diner.
- Lee, L. (2014). Digital news stories: Building language learners' content knowledge and speaking skills. *Foreign Language Annals*, 47(2), 338-356.
- Leu, D. J., O'Byrne, W. I., Zawlinski, L., McVerry, G., & Everett-Cacopardo, H. (2009). Expanding the new literacies conversation. *Educational Researcher*, 38(4), 264-269.
- Leu, D.J. , Forzani, E. , Rhoads, C. , Maykel, C. , Kennedy, C. , & Timbrell, N . (2014). The new literacies of online research and comprehension: Rethinking the reading achievement gap. *Reading Research Quarterly*, 50(1), 37-59.
- Leu, D. J., Forzani, E., & Kennedy, C. (2015). Income inequality and the online reading gap. *The Reading Teacher*, 68(6), 422-427.
- Li, Y., & Ranieri, M. (2013). Educational and social correlates of the digital divide for rural and urban children: A study on primary school students in a provincial city of China. *Computers & Education*, 60(1), 197-209.
- MacArthur, C. A. (2006). The effects of new technologies on writing and the writing process. In C. A. MacArthur, S. Graham, & J. Fitzgerald (Eds.), *Handbook of writing research* (pp. 248-262). New York: Guilford.
- Marshall, C., & Rossman, G.B. (2011). *Designing qualitative research* (5th ed.). Thousand Oaks, CA: Sage.
- McGrail, E., & Davis, A. (2011). The influence of classroom blogging on elementary student writing. *Journal of Research in Childhood Education*, 25(4), 415-437.
- McKeough, A., Palmer, J., Jarvey, M., & Bird, S. (2007). Best narrative writing practices when teaching from a developmental framework. In S. Graham, C. MacArthur, & J. Fitzgerald (Eds.), *Best practices in writing instruction* (pp. 50-73). New York: Guilford.
- Miles, M.B., Huberman, A.M., & Saldaña, J. (2013). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Thousand Oaks, CA: Sage.
- Mills, G. E. (2014). *Action research: A guide for the teacher researcher* (with My Education Lab). (5th ed.). Upper Saddle River, NJ: Pearson.
- National Center for Education Statistics (2012). *The Nation's Report Card: Writing 2011* (NCES 2012-470). Institute of Education Sciences, U.S. Department of Education, Washington, D.C. Retrieved from <http://nces.ed.gov/nationsreportcard/pdf/main2011/2012470.pdf>.

- National Commission on Writing. (2003). *The neglected R: The need for a writing revolution*. New York: College Entrance Examination Board. Retrieved from <http://www.vantagelearning.com/docs/myaccess/neglectedr.pdf>.
- National Commission on Writing. (2004). *Writing: A ticket to work...or a ticket out: A survey of business leaders*. Retrieved from http://www.collegeboard.com/prod_downloads/writingcom/writing-ticket-to-work.pdf.
- Ohler, J. (2006). The world of digital storytelling. *Educational leadership*, 63(4), 44-47.
- Ohler, J. (2008). *Digital storytelling in the classroom: New media pathways to literacy, learning, and creativity*. Thousand Oaks, CA: Corwin.
- Ohler, J. (2013). *Digital storytelling in the classroom: New media pathways to literacy, learning, and creativity* (2nd Ed.). Thousand Oaks, CA: Corwin
- Ozkar, Y. (2007). *The effect of 6+1 analytic writing and evaluation model on enhancing 5th grade students' narrative writing skills*. (Doctoral thesis, Gazi University Institute of Educational Sciences, Ankara, Turkey) Retrieved from <https://tez.yok.gov.tr/UlusalTezMerkezi/>.
- Prior, P. (2006). A sociocultural theory of writing. In C. MacArthur, S. Graham, & J. Fitzgerald (Eds.). *Handbook of writing research* (pp. 54-66). New York: Guilford.
- Ranker, J. (2008). Composing across multiple media a case study of digital video production in a fifth grade classroom. *Written Communication*, 25(2), 196-234.
- Robin, B. (2006, March). The educational uses of digital storytelling. In *Society for Information Technology & Teacher Education International Conference* (Vol. 2006, No. 1, pp. 709-716).
- Robin, B. (2008). Digital storytelling: A powerful technology tool for the 21st century classroom. *Theory into Practice*, 47, 220-228.
- Russell, D. R. (1997). Rethinking Genre in school and society an activity theory analysis. *Written communication*, 14(4), 504-554.
- Sadik, A. (2008). Digital storytelling: a meaningful technology-integrated approach for engaged student learning. *Educational technology research and development*, 56(4), 487-506.
- Sagor, R. (2005). *The action research guidebook: A four-step process for educators and school teams*. Thousand Oaks, California: Corwin Press, Sage.
- Salahu-Din, D., Persky, H., & Miller, J. (2008). *The nation's report card: Writing 2007* (NCES 2008-468). Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education. Retrieved from: <http://nces.ed.gov/nationsreportcard/pdf/main2007/2008468.pdf> (20.12.2014).
- Saunders, J.M. (2014). Where writing happens: Elevating student writing and developing voice through digital storytelling. *Teaching/Writing: The Journal of Writing Teacher Education*, 3(1), 61-70.
- Schultz, K., & Fecho, B. (2000). Society's child: Social context and writing development. *Educational Psychologist*, 35(1), 51-62.
- Skinner, E., & Hagood, M. C. (2008). Developing literate identities with English language learners through digital storytelling. *The Reading Matrix: An International Online Journal*, 8(2), 12-38.
- Smeda, N., Dakich, E., & Sharda, N. (2014). The effectiveness of digital storytelling in the classrooms: A comprehensive study. *Smart Learning Environments*, 1(1), 1-21.
- Spandel, V. (2013). *Creating writer: 6 traits, process, workshop and literature*. Upper Saddle River, NJ: Pearson.

- Stojke, A.E. (2009). *Digital storytelling as a tool for revision* (Doctoral Dissertation). Retrieved from ProQuest LLC (3367697).
- Stringer, E., Christensen, L., & Baldwin, S. (2010). *Integrating teaching, learning, and action research: Enhancing instruction in the K-12 classroom*. Thousand Oaks, CA: Sage.
- Sylvester, R., & Greenidge, W. L. (2009). Digital storytelling: Extending the potential for struggling writers. *The Reading Teacher*, 63(4), 284-295.
- Tompkins, G.E. (2008). *Teaching writing: Balancing process and product*. Upper Saddle River, NJ: Pearson.
- Turkey Statistical Institute (2013). 06-15 yaş grubu çocuklarda bilişim teknolojileri kullanımı ve medya [The use of technology in children 9-12 years old and media]. Retrieved from <http://www.tuik.gov.tr/PreHaberBultenleri.do?id=15866>.
- Vasudevan, L., Schultz, K., & Bateman, J. (2010). Rethinking composing in a digital age: Authoring literate identities through multimodal storytelling. *Written Communication*, 27(4), 442-468.
- Xin, J. (2013, August). Using digital stories in writing instruction for secondary students with disabilities. In *2013 International Conference on Educational Research and Sports Education (ERSE 2013)*. Atlantis.
- Yıldırım, A. & Şimşek, H. (2008). *Sosyal bilimlerde nitel araştırma yöntemleri*. [Qualitative research methods in social science] Ankara: Seçkin.
- Yüksel, P. (2011). *Using digital storytelling in early childhood education: A phenomenological study of teachers' experiences* (Doctoral Thesis, METU the Graduate School of Natural and Applied Sciences) Retrieved from <https://tez.yok.gov.tr/UlusalTezMerkezi/>.
- Zhao, L., Lu, Y., Huang, W., & Wang, Q. (2010). Internet inequality: The relationship between high school students' Internet use in different locations and their Internet self-efficacy. *Computers & Education*, 55, 1405-1423.

www.iejee.com

This page is intentionally left blank