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The effect of digital stories on primary school students' creative writing skills

İrem Demîrbaş[1] · Ayfer Şahîn[2]

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Abstract

This study aims to determine the effect of digital stories on the creative writing skills of primary school 4th-grade students. For this purpose, a quasi-experimental research model with a pretest-posttest control group was utilized. The data were collected in the second semester of the 2018–2019 academic year in Şanlıurfa, Turkey. Prior to application, students in both groups wrote 3 stories using 3 different story maps prepared by the researcher at the beginning. During the research process, eight digital stories created by the researcher were played to the students in experimental group. In contrast, these stories were read by the teacher and listened by the students in control group. At the end of the 8-week application process, students were expected to write 3 stories based on the same story maps. "Creative Writing Rubric" was used to determine the creative writing scores of the students in the experimental and control groups both before and after the application process. In the study, it was figured out that digital stories increase the creative writing success scores of the students in the experimental group. It was also identified that there is a significant difference between the creative writing pretest and post-test mean scores of the students in the experimental and control groups in favor of the post-tests. In addition, the effect of the digital stories applied to students in the experimental group on creative writing skills was greater than the students in control group instructed by paper-based technique.

Keywords Storytelling · Writing · Digital story · Digital storytelling · Creative writing

✉ İrem Demírbaş
irem.demirbas@gop.edu.tr; demirbasirem570@gmail.com

Ayfer Şahín
asahin@ahievran.edu.tr

[1] Faculty of Education, Department of Primary Education, Tokat Gaziosmanpasa University, Tokat, Turkey

[2] Faculty of Education, Department of Primary Education, Kırsehir Ahi Evran University, Kırsehir, Turkey

1 Introduction

Technology is developing and changing day by day. With the development of scientific knowledge and technology, the need for technological tools increases, and technological innovations gain an essential place in our lives. Considering that development in society starts with agriculture and continues with industry, it is possible for the future to integrate with the digital age (Canlıoğlu, 2008). At this point, the issue of raising individuals who can adapt to the digital age comes into prominence. In this context, the starting point of the expressions "digital natives" and "digital immigrants" used when describing individuals stems from their adaptability to the digital age. Whereas digital narratives term is used for those who were born and raised in the digital age, the concept of digital immigrants has been used for individuals who make an effort to adapt to the digital age later (Karabulut, 2015; Kurt et al., 2013; Parsa & Aytaş, 2014). Adapting to the digital era requires the ability to use technology effectively.

Today, it is possible to see digital technologies in all areas of life. Education is one of these areas. It is important to train students and teachers who can adapt to the digital age and use technology effectively in educational environments to follow the era's innovations. Increasing students' competence in digital technologies is primarily one of the responsibilities of teachers who are the implementers of education. The International Society for Technology in Education (ISTE) designs and develops one of the standards regarding the use of technology in education for teachers, "The digital age's learning experiences and evaluations." (ISTE, 2008). The inclusion of technology in the classroom environment by teachers creates an environment for students to discover and access information during the education process. Digital stories created with a digital narrative technique are the technological tools that become popular in the educational process (Tunç & Karadağ, 2013; Yüzer & Kılınç, 2015). When the literature is examined, digital media-oriented literacy is often referred to as 21st-century (century) skills and competencies (Ananiadou & Claro, 2009; Jakes, 2006).

Digital stories are one of the digital materials used in education (Göçen Kabaran & Aldan Karademir, 2017). Digital story creation is the process of transferring stories to digital media with multimedia tools (Figa, 2004). The integrated presentation of text, visual, sound, and movement elements in digital stories appeal to students' multiple senses. It can be thought that students who have different intelligence types (visual, verbal, social, kinesthetic, etc.), motivation and ensuring active participation in the lesson can increase. According to Niemi et al. (2014), through digital stories in the digital story creation process, students acquire many skills such as critical thinking, problem-solving, creativity, and digital literacy that are one of the 21st-century skills.

When examining technological venture projects in Turkey, Increasing Opportunities in Education Project (Fatih) is seen as a project that aimed to strengthen education's technological infrastructure. With the Intel Teacher Program, teachers were provided in-service training on this subject. A mutual educational material pool was created with the Education Informatics Network (EBA) which is

an online social education platform created by the Ministry of National Education (MNE). In the last published Vision 2023 document, the sentence was shared as follows; "Turkey has entered into the digital ecosystem and the teachers who provide a suitable education for children's nature will be encouraged teachers to develop themselves in this regard" (MEB, 2018). For all these reasons, the importance of digital content educational materials is increasing day by day in teachers' and students' training with 21st-century competencies. Students who are growing up in the 21st-century society have some expectations from the schools like having technology infrastructure, using digital media in lessons, working with groups, having play-centered learning, and adapting education to the individual (Kerr, 2005; Moyle & Owen, 2009; Oblinger & Oblinger 2005; Ohler, 2006).

In today's world, where information and technology are rapidly consumed and worn out, the development of individuals' thinking skills becomes more important. Because today's young people prefer to approve of others' opinions instead of thinking with their brains, creative writing activities can greatly contribute to the development of thinking. That is why, in order to write creatively, first of all, people need to have a certain intellectual background; filter this background, structure them in mind, and put forward a written product by incorporating their own style of expression (style) (Şahin, 2016, p.280). In this context, when the definitions of creative writing are examined; creative writing is generally defined as expressing what is personal, imaginary, and what is in the person (Burns & Lowe, 1966, cited in Öztürk 2007). As a similar definition, creative writing is based on establishing different and fluent relationships between many thoughts and dreams (Temizkan, 2010, p.627). According to Güleryüz (2006, p.126), creative writing is an activity of putting forward a new composition, poem, story, essay, or novel by reconstructing existing information, concepts, events, sounds in memory, images, dreams, and associating them with each other. Creative writing means freely writing one's feelings and thoughts on a subject using his / her imagination (Oral, 2003, p. 8). In light of these definitions, it could be concluded by saying that creative writing is an artistic activity that reflects a process of connecting many existing thoughts and imagination to explain the factor that was effective in determining the subject of this study, Dewey's (2004) sentences can be shown as an example. As Dewey (2004) stated, "If we teach today's students as we taught yesterday's, we rob them of tomorrow." In short, education develops and changes from the past to the future. The student profile also differs between the past and the present. Thus, it is necessary to use digital materials that can meet the needs of students in education in accordance with the requirements of the age. All these developments can be possible with the teacher' updating himself/herself. At this point, what is expected from the teacher can be expressed as improving his/her technological pedagogical content knowledge. Another 21st-century competence expected from teachers is that teachers have integrated equipment on how to transfer this knowledge to students in addition to technological knowledge. It is obvious that 21st-century skills can be developed and acquired through educational materials with digital content in today's digital age. Digital stories are one that is the most popular of these materials (Jakes, 2006; Jakes & Brennan, 2005; Robin, 2008). In summary, digital stories are effective educational material in the way of developing students' creative writing skills.

In this study, the research question was, "Is there a significant difference between the creative writing skills of the students in the experimental group in which digital stories were applied and the control group students who were taught by paper reading?" Based on this research question, answers were sought for the following sub-problems:

1. Is there a significant difference between the creative writing pretest and post-test scores of the experimental group students?
2. Is there a significant difference between the creative writing pretest and post-test scores of the control group students?
3. Is there a significant difference between the creative writing post-test success scores of the experimental and control group students?
4. Is there a significant difference between the experimental and control group students' creative writing achievement scores?
5. What are the average scores of the experimental and control group students in the sub-aspects of creative writing according to the methods applied to them?

1.1 Purpose and importance of the Research

The study aims to determine whether digital stories have an effect on primary school students' creative writing skills. When the literature is examined, it is seen that there are studies about digital storytelling to improve students' writing skills (Baki & Feyzioğlu, 2017; Başdaş & Vural, 2017; Çıralı 2014; Dayan & Girmen, 2018; Demir & Kılıçkıran, 2018; Demirer & Baki, 2018; Gider, 2019; Şimşek et al., 2018; Turgut & Kışla, 2015; Yamaç, 2015). In addition to writing skills, with the acceleration of digitalization with technology today, individuals' technological opportunities to develop their creativity have increased. One of these possibilities is a digital storytelling (Baki, 2019; Uslu, 2019). Teachers can plan activities that can improve students' creative writing skills. When these activities are carried out using technology, they can also raise creative individuals and adapt to the digital age, which is some of the 21st-century skills. Creative writing activating tools can be used to raise children's awareness as a starting point to activate students' dreams (Öztürk, 2007). It is stated that the multiple components (sound, movement, visual, writing, etc.) in digital stories play an active role in revealing the imagination of students by appealing to their multiple senses. However, it is seen that there are limited studies in which the digital storytelling method, which offers teachers the opportunity to integrate digital story and technology in the classroom environment, is used by teachers and the studies that include the creative writing aspect, which is one of the 21st-century skills of the digital storytelling method (Baki, 2019; Uslu, 2019). It is believed that this study may contribute to the literature in this context and fill the gap in this field.

2 Method

2.1 Research model

The research was designed in a quasi-experimental model with a pretest-posttest control group, among quantitative research designs. There are two groups called experimental

and control groups formed without random assignment in this design, and both groups are pretested and post-tested (Creswell, 2016; Karasar, 2005). Quasi-experimental designs are research designs in which the experimental process is applied, but not all external variables can be controlled (Christensen et al., 2015). The point to be considered in this design is that the independent variables and methods used in the experimental group are not used in the control group (Sönmez & Alacapınar, 2016). According to the results obtained from pretests and post-tests applied in experimental studies, the effect of the technique used on the experimental group can be investigated (Büyüköztürk, 2013). Thanks to this feature, the experimental method stands out as the most suitable method for the purpose of the research (See Table 1).

2.2 Study population and sample

The universe of this research consists of primary school 4th-grade students in Bozova district of Şanlıurfa province in the academic year of 2018–2019. A total of 52 students studying in two classes of the fourth grade of a state school constitute the sample of the study. A convenience sampling method, one of the non-random sampling methods, was employed in school selection. Convenience sampling is a very common sampling technique especially used in humanitarian research. It is preferred in terms of practicality and economy (Creswell, 2012; Fraenkel et al., 2012; Monette et al., 1990). In this context, the study was carried out in the district where the researcher was working. Determination of the control and experimental groups used in the study was determined by lot (See Tables 2 and 3).

When the demographic information of the sample group of the study was examined, there were a total of 26 students, 17 female (65.4%) and nine male (34.6%) students in the experimental group, while 16 female (61.5%) and ten male students (%38.5), a total of 26 students. It is seen that the experimental and control groups are similar in terms of their preschool education status, parents' education status, mother and father occupation status, and family monthly average income (See Table 4).

2.3 Data collection tools

Different tools were used to collect data in the study. These were "Creative Writing Rubric", "Creative Writing Story Maps", and "Personal Information Form"

Table 1 Symbolic view of the research model

Group	Pre-test	Experimental process	Post-test
EG	CWSM1 CWR1	Teaching Based on Digital Stories	CWSM2 CWR2
CG	CWSM1 CWR1	Paper Reading Supported Teaching	CWSM2 CWR2

* In the table above; EG refers to the experimental group, the CG control group, CWSM creative writing story maps, and CWR creative writing rubric

Table 2 Study groups of the study

Group	Process	School	Grade	Number of students
Experiment	Teaching Based on Digital Stories	A Primary School	4-B	26
Control	Paper Reading Supported Teaching	A Primary School	4-C	26

regarding digital narrative. Creative Writing Story Maps and Creative Writing Rubric were applied to the experimental and control groups before and after the experimental process. The "Personal Information Form" was applied to the experimental and control groups before the experimental procedure.

In order to determine the creative writing skill levels, the stories written by the students through the "Creative Writing Story Maps" created by the researcher with the opinions of two experts were used. The "Creative Writing Rubric" developed by Öztürk (2007) was used for scoring these stories. Story maps were prepared by considering three aspects that were the name of the story, the subject related to the story, the main idea, the event, the place, the heroes, and the time elements. These maps were printed and evaluated as a pretest before the experimental applications and as a post-test after the applications. The stories were written by the students in the experimental and control groups in accordance with the information presented to them in these story maps, and they were evaluated by the researcher and two field experts through the Creative Writing Rubric, and the arithmetic means of these three scores formed the students' creative writing scores. The Creative Writing Rubric includes eight sub-aspects as follows "Originality of Ideas, Flexibility of Thoughts, Fluency of Thoughts, Word Choice, Sentence Structure, Organization, Writing Style, Compliance with Grammar Rules."

The Personal Information Form prepared by the researcher was used to determine the personal information of the students in the experimental and control groups. Through this form, the gender of the students, the educational status, and the profession of the parents were obtained. The digital stories used in the process were prepared with the help of experts.

2.4 Research application

The researcher applied creative writing practices related to digital stories to 4th-grade students studying at a state school in Bozova district of Şanlıurfa province in the 2018–2019 academic year. Below are the steps for the implementation process:

Step 1: Identifying the Stories

There are eight themes in the primary school 4th-grade Turkish textbook. According to the annual plan, four themes are covered in the 1st semester and four themes in the 2nd semester. There are 4 texts in each theme. When the curriculum of

Table 3 Frequency and percentage distributions regarding students' demographic characteristics

Variables		Experimental group		Control group	
		f	%	f	%
Gender	Female	17	65,4	16	61,5
	Male	9	34,6	10	38,5
	Total	**26**	**100,0**	**26**	**100,0**
Father education	Primary school	4	15,4	4	15,4
	Middle School	8	30,8	9	34,6
	High school	8	30,8	7	26,9
	University	5	19,2	5	19,2
	Postgraduate	1	3,8	1	3,8
	Total	**26**	**100,0**	**26**	**100,0**
Mother education	Primary school	7	26,9	7	26,9
	Middle School	4	15,4	5	19,2
	High school	6	23,1	5	19,2
	University	5	19,2	5	19,2
	Postgraduate	4	15,4	4	15,4
	Total	**26**	**100,0**	**26**	**100,0**
Father's profession	Worker	11	40,2	11	40,2
	Farmer	0	0	0	0
	Officer	7	26,9	6	23,0
	Artisan	7	26,9	8	30,7
	Other	1	3,8	1	3,8
	Total	**26**	**100,0**	**26**	**100,0**
Mother's profession	Worker	2	7,6	2	7,6
	Farmer	22	84,6	22	84,6
	Officer	2	7,6	2	7,6
	Artisan	0	0	0	0
	Other	0	0	0	0
	Total	**26**	**100,0**	**26**	**100,0**
Family monthly income	Less than 1000 TL	3	11,5	3	11,5
	Between 1000–3000 TL	9	34,6	9	34,6
	Between 3000–6000 TL	7	26,9	7	26,9
	Over 6000 TL	7	26,9	7	26,9
	Total	**26**	**100,0**	**26**	**100,0**

Table 4 Data collection tools used in the study and application times

Application time	Groups	Creative writing story maps	Creative writing rubric	Personal information form
Before experimental procedure	Experiment and Control	X	X	X
After the experimental procedure	Experiment and Control	X	X	

4th grade was taken into consideration, four texts in each of the 5th and 6th themes named respectively; "Production, Consumption and Efficiency" and "Beautiful Country Turkey," were selected. In total, eight texts were presented. These themes were selected from the primary school 4th-grade Turkish textbooks prepared by the Ministry of National Education to be digitally designed in 2014, 2016, and 2017. The reason why the texts in the sample group were not chosen from their own textbooks is that the students could read these texts beforehand, which may cause a threat to the validity and reliability of the application process. After the stories were selected, the stage of transferring them to digital media started.

Step 2: Transferring Stories to Digital Media

The designs of the digital stories were made in the program called "Adobe Illustrator". "Adobe After Effects" program was preferred for digital production. Stories were generally formed in three stages. These stages were design, movement, and voiceover. While creating digital stories, descriptions in the text were taken into consideration first. According to these descriptions, drafts were prepared for stage designs. While preparing the drafts, the whole scene was first edited, and then the pieces were formed. The scenes, characters, and objects in the text were designed separately. The skeleton of the characters was created first. All designs were added to "Adobe After Effects" program, and story scenes were set. In the last stage, motion actions were prepared, and camera movements were adjusted. The latest audio sync was added. The vocalization of digital stories was made by a Turkish Language and Literature teacher who is a professional theater actor. The reason for using "Adobe" programs in the digital story creation process is the ease of use and user-friendly interface. Besides being compatible with other programs, the program provides the opportunity to work in vector format serving the flexibility of creating and controlling characters more quickly and effectively. Three experts examined digital stories created with a professional team, and their suitability was checked. After the stories were transferred to digital media, the pilot implementation phase started.

Step 3: Pilot Implementation

Before the main implementation, a pilot implementation was made to the 4-D branch in the school. The pilot implementation lasted six weeks. The purpose of this application is to see possible deficiencies that may occur during the implementation phase and to be able to make the necessary arrangements beforehand. Story Map activities were applied to the students during pilot implementation. All digital stories to be used in the original application have been listened by the pilot group for six weeks, and story map activities were also carried out for this group. At the end of six weeks, the digital story implementation process, Creative Writing Rubric, activities, etc. were examined. The places where it was insufficient in implementation were determined, and the process was tried to be improved while no change is done in Creative Writing Rubric, before starting the actual implementation process. In practice, it was determined that the instructions were not clear and understandable. The

instruction statements on this issue were corrected, and it was stated in the meeting with the teachers that teachers should pay attention to the instructions. After the necessary arrangements were made in light of the data obtained from the pilot application, the actual applications started. Before the application, Creative Writing Rubric was applied to the experimental and control groups as a pretest.

Step 4: Implementation Phase

In the second semester of the 2018–2019 academic year, practices based on digital storytelling and paper-based technique were carried out in the designated school within eight weeks. To make the teachers in the experimental and control groups teach the lesson in line with the plans, the instructions to follow by the teachers during the lesson process are clearly stated in the plan. Story listening practice was applied to the experimental and control groups for a total of 24 h, three lesson hours each week. Before the application, the demographic information of the students was obtained through the personal information form. Three story maps created by the researcher and two field experts were applied to the students one day apart before the experimental procedure. Afterward, eight digital stories created by the researcher were presented to the experimental group, while the same stories were read by the teacher using the paper-based technique to the control group. After the application, these three story maps were applied to the experimental and control groups. "Creative Writing Rubric" was used to determine the creative writing scores of the students in the experimental and control groups at the beginning and end of the application process. Creative Writing Rubric consists of eight sub-aspects which are "Originality of Ideas, Flexibility of Thoughts, Fluency of Thoughts, Word Choice, Sentence Structure, Organization, Writing Style, Compliance with Grammar Rules" (See Table 5).

2.5 Analysis of data

Descriptive statistics (mean, standard deviation, etc.) were computed in order to answer the sub-problems within the scope of the research. The analysis process is summarized in Fig. 1.

In order to compare the experimental and control groups, firstly, Kolmogorov-Smirnow normality test was performed to determine whether the data showed normal distribution, and Skewness (skewness) and Kurtosis (kurtosis) values were calculated. After it was determined that the data showed a normal distribution, "Independent Sample t-Test" was used to compare the pretest scores of the experimental and control groups. To compare the pretest and post-test scores of the groups within themselves, "Paired Samples t-Test" was used." Independent Sample t-test" was used to compare the post-test scores of the experimental and control groups together and to compare the achievement scores of the experimental and control groups. In all statistics, the level of significance was accepted as 0.05 (Büyüköztürk et al., 2018; Can 2016; Pallant, 2016).

Table 5 Experimental process process

Week	Working group	Process
1. Week	Experiment Control	Personal Information Form Writing three stories to students every day (Creative Writing Pretest)
2. Week	Experiment	Making students watch and listen to the digital story "Talking Things"
	Control	Reading the story named "Talking Items" by the teacher on paper, students analyzing the visuals of the story and making visual reading
3. Week	Experiment	Making students watch and listen to the digital story "Pottery Master Turtle"
	Control	Reading the story "Pottery Master Tortoise" by the teacher from paper, students reviewing the visuals of the story and reading it visually
4. Week	Experiment	Making students watch and listen to the digital story "Marketplace"
	Control	Reading the story named "Marketplace" by the teacher on paper, students examining the visuals of the story and making visual reading
5. Week	Experiment	Making students watch and listen to the digital story "In the Land of Paper"
	Control	Reading the story "In the Land of Papers" by the teacher on paper, the students examining the visuals of the story and reading it visually
6. Week	Experiment	Letting students listen to the digital story "Amasya is a Legend"
	Control	Reading the story "Amasya is a Legend" by the teacher on paper, students examining the visuals of the story and making visual reading
7. Week	Experiment	Making students watch and listen to the digital story "Color Map of My Country"
	Control	Reading the story "Color Map of My Country" by the teacher on paper, and the students examining the visuals of the story and reading it
8. Week	Experiment	Making students watch and listen to the digital story "The Only One Who Never Loses His Hope"
	Control	The teacher reading the story "The One Person Who Never Loses His Hope" on paper, the students review the visuals of the story and make visual reading.
9. Week	Experiment	Making students watch and listen to the digital story "My Istanbul World"
	Control	Reading the story named "My İstanbul World" by the teacher on paper, and the students review the visuals of the story and make visual reading.
10. Week	Experiment Control	Writing three stories to students every day (Creative Writing Posttest)

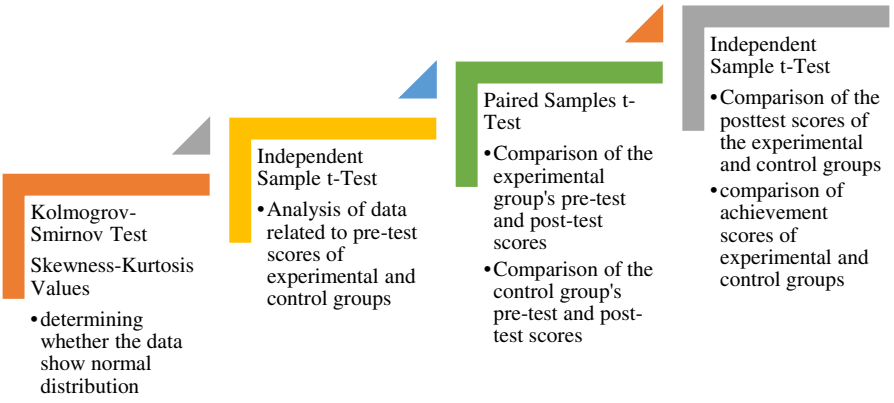

Fig. 1 Statistics used in data analysis

2.5.1 Normality analysis of the data regarding the experimental and control groups' creative writing pre-test and post-test scores

The results of the normality tests of the experimental and control groups regarding the creative writing pretest and post-test scores are given in Table 6.

Since the number of observations was below 30, Shapiro-Wilk values were checked (Can, 2016). Since the control group, post-test scores are $p > .05$, it shows a normal distribution. Since the experimental and control group, creative writing pretest scores and the experimental group's creative writing post-test scores are $p > .05$, and they show a normal distribution. However, since the control group's creative writing post-test scores were $p < .05$, it did not show a normal distribution (See Table 7).

The skewness and kurtosis indices calculated by dividing the skewness and kurtosis coefficients into their standard errors are within ± 2 limits, and close to 0 is considered evidence that the data show a normal distribution (Tabachnick & Fidell, 2013). In this study, since the values obtained by dividing the skewness and kurtosis coefficients for the control group creative writing post-test scores (1,020 /, 456 with, 674 /, 887) were within these ranges and the Shapiro-Wilk test was found to be meaningless, the data showed normal distribution.

Table 6 Normality test results for the experimental and control groups' creative writing pre-test and post-test scores

		Pre-test scores			Post-test scores		
Variable	Group	Skewness	Kurtosis	Shapiro-Wilk	Skewness	Kurtosis	Shapiro-Wilk
Creative writing	Experiment	,618	,291	,064	-,025	,193	,963
	Control	-,258	,421	,077	1,020	,674	,004

Table 7 Kurtosis-skewness range of the control group creative writing posttest scores

Groups - Post-test	Skewness	Std. Error Of Skewness	Kurtosis	Std. Error Of Kurtosis
Control group creative writing	1,020	,456	,674	,887

2.5.2 Analysis of data regarding the experimental and control groups' creative writing pre-test scores

Creative Writing Rubric was applied to the experimental and control groups as a pretest. Whether there is a significant difference between the pretest success levels of the students in the experimental group in which teaching was applied according to the digital storytelling method and the students in the control group in which paper-based teaching was applied, was calculated with the "Independent Samples t Test" and the results are presented in Table 8:

When the table of creative writing pretest scores of students in the experimental and control groups is examined; in the creative writing aspect; it is seen that the average of the students in the experimental group is ($X = 2.60$) while the average of the students in the control group is (

$= 2.32$). According to the calculated t value and the significance level at a 95% confidence interval (t (50) = 1,243, p > .05), it was determined that there was no significant difference between the students in the experimental and control groups. According to these results, it can be said that the groups were equal before the experimental procedures.

3 Results

3.1 First sub-question: Is there a significant difference between the creative writing pretest and post-test scores of the experimental group students?

The first sub-problem of the study was, "*Is there a significant difference between the creative writing pretest and post-test scores of the experimental group students?*" There is a significant difference between the experimental group students' creative writing scores in which digital stories were applied before and after the experimental procedure was calculated with the "Paired Samples T-Test" and the results are given in Table 9 below.

Table 8 Independent samples t-test results on the experiment and control group creative writing pre-test scores

	Group	N	$\bar{X}$	S	SD	t	p
Creative writing	Experiment	26	2,6010	,92,670	50	1,243	,220
	Control	26	2,3221	,67,005			

While the average of creative writing pretest scores of the experimental group students to which digital stories were applied was ($\bar{X}$ = 2.60), the average post-test scores rose to ($\bar{X}$ = 3.14). According to the calculated t value and the level of significance at 95% confidence interval (t (25) = -3,273; p < .05), it was determined that there was a significant difference between the levels of creative writing of the students in the experimental group to which digital stories were applied before and after the experimental process. According to this finding, it can be concluded that the digital stories applied in the experimental group are effective in developing the creative writing skills of the students. The pretest and post-test worksheets of the student with the code S26 in the experimental group are shown in Example 1 and Example 2.

When Example 1 was examined, the text in the pretest sample of the student with code S26 in the experimental group was "*"Okulun açıldığı haftanın birinci günüydü. (*It was the first day of the week when the school started.)", *"Herkes sevinçliydi. (*Everyone was happy.)", *"Sınıf çok mutluydu."* (The classroom was very happy.)" It is seen that such sentences are short and thoughts are quite limited. This situation stands out with the narrow scope of the article. In the text, " *Ertesi gün Zeynep okula gelmemişti. (*The next day Zeynep did not come to school.)" As in the sentence, sentences are generally in a simple sentence structure. There are no punctuation marks at the end of the sentences. Therefore, there are errors in spelling the words and the use of some words in sentences. For example, expressing the word "ders (lesson)" as "der" and writing "herkes (everybody)" as "herkez" are defined as misspelled words.

When the post-test sample of the student coded Ö26 in the experimental group in Example 2 was examined, *"Okulun açıldığı haftaydı. O hafta herkes birbirine sarılıyordu ve tatilini anlatıyordu. (*It was the week when the school was opened. That week everyone was hugging each other and was telling about their vacation.)" As can be seen in the sentence, it can be interpreted as a connection between thoughts since the sentences are long and linked. When the texts in Example 1 and Example 2 are evaluated together, it is seen that the student includes more words in the text in Example 2, and creates longer and more comprehensive sentences. In Example 2, it was determined that punctuation marks were not placed at the end of the sentences, and also, some words were not spelled correctly. For example, it is seen that the word "herkes (everyone)" is used as "herkez" and the word "tehdit (threat)" as "tehtit". In the organizational structure of the writing, Zeynep said, "*"Saçları altın sarısı, gözleri denizler kadar mavi, teni kar beyazı, dudakları kan kırmızısı olan bu kız çok güzeldi. (*This girl with golden yellow hair, blue eyes as the

Table 9 Paired sample t-test results for experimental group creative writing pre test-post test scores

	Measurement	N	$\bar{X}$	S	sd	t	p
Experiment group	Pre-test	26	2,6010	,92,670	25	-3,273	,003
	Post Test	26	3,1442	,91,015			

sea, snow-white skin and blood-red lips was very beautiful.)" It is an indication that the details are given, and the descriptions are made.

3.2 Second sub-question: Is there a significant difference between the creative writing pretest and post-test scores of the control group students?

Scores Second sub-problem was formed as follows; "Is there a significant difference between the creative writing pretest and post-test scores of the control group students?". Whether there is a statistically significant difference between the creative writing scores of the control group students before and after the experimental procedure to which paper reading supported teaching was applied was calculated by using the "Paired Samples t-Test" and presented in Table 10 below.

While the average of creative writing pretest scores of students in the control group to which paper-based teaching was applied ($\bar{X}$= 2.32), the average post-test scores increased to (=2.88). According to the calculated t value and the level of significance at the 95% confidence interval (t (25) = -3,710; p < .05), it was determined that there was a significant difference between the levels of creative writing of the control group students before and after the experimental process, in which paper-based teaching was applied. According to this finding, it can be concluded that the paper-based teaching supported by reading in the control group was effective in developing students' creative writing skills. Below, the stories that the students wrote before and after the applications with the same story map are presented in Example 3 and Example 4.

When we examine example 3, in the pretest sample of the student with the code S20 in the control group, *"Adı Zeynep'ti. Ama yürüyemiyordu. (*Her name was Zeynep. But she could not walk.)" It is observed that the scope of the article is limited due to the shortness of such sentences, and the connections cannot be made correctly. In the text, "*O gün empatiyi öğrendik. Hatalarımızı anladık. (*We learned about empathy that day. We understood our mistakes.)" It is observed that the text is concluded immediately after the introduction; the main idea is not fully understood and transferred. The introduction, development, and result are therefore not clear. In the text, *"Artık Zeynep bizim en yakın arkadaşımızdı. Herkes farklılığıyla özeldir (*Zeynep was our best friend now. Everyone is special with their differences.)" sentences are grammatically correct and punctuation is used correctly.

When Example 4 is examined, it is determined that the scope of the sentences in the post-test sample of the student coded S20 in the control group is wide due to the length of the sentences. It is observed that there are some errors in the

Table 10 Paired samples t-test results regarding the control group creative writing pre test-post test scores

	Measurement	N	$\bar{X}$	S	sd	t	p
Control group	Pre-test	26	2,3221	,67,005	25	-3,710	,001
	Post Test	26	2,8846	,88,029			

spelling of the words. For example, it is understood from the expressions written by student " *Zeynep'te* " and " iyiki " that the conjunction in words "Zeynep de" and " iyi ki " is misused. Writing the phrase "doğum günü(birthday)" as "doğumgünü" in the text is another word mistake. It can also be said that attention is paid to punctuation marks throughout the text.

3.3 Third sub-question: Is there a significant difference between experimental and control group students' creative writing post-test success scores?

Findings related to another sub-problem: "Is there a significant difference between experimental and control group students' creative writing post-test success scores?" are given below. "Independent Samples t-Test" was used to determine whether there is a significant difference between the post-experimental creative writing achievement scores of the experimental group students in which digital stories were applied and the control group students who were applied paper-based teaching. The results were tried to be explained in Table 11.

In the t-test for independent samples conducted to reveal whether there is a significant difference between the experimental and control group students' creative writing post-test achievement scores, the average test score of the students in the class using digital stories ($X_D = 3.1442$) There was no significant difference between the test score average of the students (.

$_K = 2.8846$) [t (50) = 1.045, $p > .05$]. In this case, it can be said that digital stories do not have a significant effect on creative writing skills.

3.4 Fourth sub-question: Is there a significant difference between the experimental and control group students' creative writing achievement scores?

Whether there is a statistically significant difference between the experimental group students' creative writing achievement scores and the students in the control group was calculated with the "Independent Samples t-Test", and the results are given in Table 12.

When the table of creative writing achievement scores of students in the experimental and control groups is examined; in the creative writing aspect, it is seen that the average of the students in the experimental group is X=, 5433) while the average of the students in the control group is (X =, 5625). According to the level of

Table 11 Independent samples t-test results related to the experimental and control group creative writing post test scores

	Group	N	$\bar{X}$	S	sd	t	p
Creative writing	Experiment	26	3,1442	,91,015	50	1,045	,301
	Control	26	2,8846	,88,029			

significance (t (50) = -, 086, p > .05) at the calculated t value and 95% confidence interval, it was determined that there was no significant difference between the creative writing achievement scores of the students in the experimental and control groups. Considering the average scores, it can be said that success in the creative writing process is in favor of the experimental group.

3.5 Fifth sub-question: What are the average scores of the experimental and control group students in the sub-aspects of creative writing according to the methods applied to them?

The findings regarding the question, "What are the average scores of the experimental and control group students in the sub-aspects of creative writing according to the methods applied to them?", are given in Tables 13 and 14.

In the experimental group where digital stories were applied, the effect of each of the eight sub-aspects of creative writing on students' creative writing skills was calculated with "Average and Standard Deviation Values," and the results are given in Table 13.

Examining the table on the pre-test and post-test scores in terms of 8 sub-aspects of the students' creative writing skills (originality of ideas, fluency of thoughts, flexibility of thoughts, word richness, sentence structure, organization, writing style, compliance with the rules) of students in the experimental group (Pretest $\bar{X}$= 2.34; Posttest $\bar{X}$ = 2.57), fluency of thoughts (Pretest $\bar{X}$ = 2.65; Posttest $\bar{X}$ = 3.11), flexibility of thoughts (Pretest $\bar{X}$= 2.42; Posttest $\bar{X}$ = 2.65), word richness (Pretest $\bar{X}$ = 2.61; Posttest $\bar{X}$ = 3.15), sentence structure (Pretest $\bar{X}$ = 2.42; Posttest $\bar{X}$ = 3.38), organization (Pretest $\bar{X}$ = 2.50; Posttest $\bar{X}$ = 2.96), writing style (Pretest $\bar{X}$ = 2.80; Posttest $\bar{X}$ = 3.65) It is seen that there is an increase in the average scores of the aspects of compliance with the rules (Pretest $\bar{X}$ = 3.03; Posttest $\bar{X}$ = 3.65) from before to after the experimental process.

The effect of each of the eight sub-aspects of creative writing on students' creative writing skills was calculated with "Average and Standard Deviation Values" in the control group in which paper-based instruction was applied, and the results are given in Table 14.

Examining the table regarding the pre-test and post-test scores in terms of 8 sub-aspects of the creative writing skills of the students in the control group (originality of ideas, fluency of thoughts, flexibility of thoughts, word richness, sentence structure, organization, writing style, compliance with the rules), the originality of the ideas in the students' writings (Pretest $\bar{X}$ = 2.15; Posttest $\bar{X}$ = 2.57), fluency of thoughts (Pretest $\bar{X}$ = 2.50; Posttest $\bar{X}$ = 2.96), flexibility

Table 12 Independent samples t-test results regarding the creative writing achievement scores of the experimental and control groups

	Group	N	$\bar{X}$	S	sd	t	p
Creative Writing	Experiment	26	,5433	,84,627	50	-,086	,932
	Control	26	,5625	,77,318			

Table 13 The average and standard deviation values of the experiment group for the pretest and posttest scores of the 8 sub-aspects of creative writing

	Sub aspects	Tests	$\bar{X}$	S	Skewness	Kurtosis
Experiment group	Originality of ideas	Pre-test	2,3462	,84,580	,956	,309
		Post-test	2,5769	,90,213	,991	,807
	Fluency of thoughts	Pre-test	2,6538	,97,744	,505	-,024
		Post-test	3,1154	1,03255	-,010	-,667
	Flexibility of thoughts	Pre-test	2,4231	,90,213	1,134	1,658
		Post-test	2,6538	1,01754	1,027	,427
	Word richness	Pre-test	2,6154	,98,293	,609	,011
		Post-test	3,1538	,92,487	-,327	-,156
	Sentence structure	Pre-test	2,4231	,94,543	1,162	1,175
		Post-test	3,3846	1,02282	-,634	-,315
	Organization	Pre-test	2,5000	,98,995	,938	,344
		Post-test	2,9615	1,11286	,458	-,711
	Writing style	Pre-test	2,8077	1,02056	,172	-,563
		Post-test	3,6538	1,01754	-,701	,514
	Compliance with the rules	Pre-test	3,0385	1,34107	,248	-1,408
		Post-test	3,6538	1,23101	-,525	-,869

Table 14 Average and standard deviation values of the control group's 8 sub-aspects of creative writing for pretest and post-test scores

	Sub aspects	Tests	$\bar{X}$	S	Skewness	Kurtosis
Control group	Originality of ideas	Pre-test	2,1538	,67,482	,656	1,388
		Post-test	2,5769	1,02657	1,458	,610
	Fluency of thoughts	Pre-test	2,5000	,86,023	,000	-,459
		Post-test	2,9615	,95,836	,672	-,448
	Flexibility of thoughts	Pre-test	1,9615	,44,549	-,209	2,919
		Post-test	2,5385	,98,917	1,631	1,322
	Word richness	Pre-test	2,3846	,80,384	,157	-,205
		Post-test	2,9615	1,03849	,546	-1,082
	Sentence structure	Pre-test	2,3846	,89,786	,555	-,322
		Post-test	3,0769	1,09263	,236	-1,585
	Organization	Pre-test	2,0769	,74,421	2,396	9,620
		Post-test	2,5000	,90,554	1,926	3,005
	Writing style	Pre-test	2,5769	,85,665	-,258	-,362
		Post-test	3,2692	1,07917	,034	-1,403
	Compliance with the rules	Pre-test	2,5385	,85,934	-,128	-,435
		Post-test	3,1923	1,09615	-,017	-1,681

of thoughts (Pretest $\bar{X} = 1.96$; Posttest $\bar{X} = 2.53$), word richness (Pretest $\bar{X} = 2.38$; Posttest $X = 2.96$), sentence structure (Pretest $X = 2.38$; Posttest $X = 3.07$), organization (Pretest $X = 2.07$; Posttest $X = 2.50$), writing style (Pretest $X =$

2.57; Posttest $\bar{X} = 3.26$) It is seen that there is an increase in the average scores of the aspects of compliance with the rules (Pretest $X = 2.53$; Post-test $X = 3.19$) from before to after the experimental process.

Examples 5–20 of creative writing post-tests of the experimental and control groups are stated below. The examples of the eight sub-aspects of creative writing (originality of ideas, fluency of thoughts, the flexibility of thoughts, word richness, sentence structure, organization, writing style, and grammar rules) of the experimental and control groups are presented with examples comparatively.

When Example 5 in the post-test sample of the S5 coded student in the experimental group regarding the "Originality of Ideas" aspect was scrutinized, it was recognized that the sentence "*Bu halin de ne böyle diyerek Zeynep'i dışladılar ve onunla alay ettiler. Zeynep ağlayarak sırasına geçti. (*They excluded Zeynep and mocked her by saying; "What is wrong with you? Zeynep cried and went back to her seat.)" can illustrate the expression of ideas in various ways. Moreover, the dialogue "*Neden ağladın? Çünkü arkadaşlarım beni dışladılar. (*Why did you cry? / Because my friends excluded me.)" may embody the formation of related ideas about the subject matter.

Examining Example 6, when looking at the post-test sample for the "Originality of Ideas" aspect of the student coded S21 in the control group; At the end of the text, the fact that the character sees herself as disabled is a dream, and it is an indication that the text is well-fictionalized and presented with an original idea. Based on this, it is determined that ordinary ideas are expressed in an extraordinary way. In the text, "*Zeynep okula gitmek istemiyordu. Çünkü kimse ona aldırış etmiyordu, sanki o bir hiçti. Sadece, kendisi dışlanmak için vardı sanki (*Zeynep did not want to go to school because nobody paid any attention to her, as if she was nothing. It was as if she was just there to be excluded.)" The analogies in the sentences are also indications that the thoughts are extremely original. It can be thought that the ideas in these metaphors are explained, defined, and the before-after connection is established correctly. "*Eski okulunu özlediğini anımsadı. Çünkü orada kimse onu dışlamazdı, tabi ki ilk geldiği gün hariç, alay etmezdi.* (She remembered missing her old school because no one would exclude her there, of course, no one would make fun of her except the day she first arrived.)" As can be understood from the expressions, it was determined that the ideas in the article were developed very well.

Examining Example 7 and looking at the post-test sample regarding the "Fluency of Thoughts" aspect of the student coded S7 in the experimental group, the text reads " *Tekerlekli sandalyedeki Zeynep: Ali ve Merve, benim okul bahçesine inmeme yardım eder misiniz?* (Zeynep in the wheelchair: Ali and Merve, can you help me get down to the school garden?)" since the text is supported by dialogues as in the sentence, the expressions are fluent,

"*Evet ya o da doğru tekerlekli sandalyede değil mi?* (Oh, yes! She is in a wheelchair, isn't she?)". As in the sentence, it is determined that the connections between the thoughts in the text are provided by conjunctions. For this reason, it is observed that the thoughts are interconnected and relevant. From the statements of Zeynep mentioned in the text to Nedime who helped her " *Çok teşekkür ederim sana Nedime. Sen olmasan ben ne yapardım?* (Thank you very much, Nedime. What

would I do without you?)", it is determined that the content is relevant to the subject and the result is appropriate to include the content.

When the text of the S10 coded student in the control group in Example 8 is evaluated with the aspect "Fluency of Thoughts"; "*Zeynep sonra ağlayarak okuldan kaçtı. Sonra öğretmeni sınıfa girdi ve dedi ki Zeynep nerede?* (Zeynep then ran away from school crying. Then her teacher entered the classroom and said 'Where is Zeynep?')" It was determined that the event in the text was given based on the element of excitement and made the reader curious and excited. "*Ailesi dedi ki Zeynep evde değil. Sonra annesi ve babası telaşla polise gitti.* (Her family said Zeynep is not at home. Then her mother and father went to the police in a hurry.)" In his sentence, this excitement was fluent due to the reader's desire to read the next sentence. "*Zeynep ağlamaya başlamış ve sonra bir yere saklanmış. O hayvan gittikten sonra o da gitmiş.* (Zeynep started to cry and then hid somewhere. After that animal left, she left too.)" It is determined that the connections between the thoughts in the sentences are provided by conjunctions. For this reason, it is observed that the thoughts are interconnected and relevant.

When the story of the student coded S4 in the experimental group in example 9 is evaluated in the aspect of "Flexibility of Thoughts"; " *Bütün herkes tekerlekli sandalyeye bindi ve Zeynep'ten özür diledi.* (Everyone got on a wheelchair and apologized to Zeynep.)" Making students empathize with Zeynep in the thoughts presented in her statement can be interpreted as trying to catch flexibility in thoughts. In the entire text, in sentences like "*Teneffüste herkes Zeyneple dalga geçti, engelli dediler. Herkes Zeynep'in kalbini kırdı. Zeynep eve geldiğinde çok üzgündü.* (Everyone made fun of Zeynep at the break, they mocked her saying 'retard'. Everyone broke Zeynep's heart. When Zeynep came home, she was very upset.)", it is observed that different thoughts are easily expressed by associating them with each other in the text.

When Example 10 in the final test sample of the S5 coded student in the control group regarding the "Flexibility of Thoughts" aspect was examined, from the sentences " *Zeynep kantine gidiyor, Zeynep sıraya geçiyor ve sonra bir kişi Zeynep'in sırasını alıyor. Zeynep sınıfa giderken birkaç kişi onunla dalga geçiyor* (Zeynep goes to the canteen, Zeynep gets in line, and then one person takes Zeynep's turn several people make fun of Zeynep while she goes to class.)", it can be said that the thoughts in the sentences are very similar to their precedents. Then. "*Zeynep ağlıyor.* (Zeynep is crying.)" It is considered that the scope of the text is narrow. "*Zeynep eve gitti ve odasına çıktı, ağlıyordu. Annesinin geldiğini duyunca uyuma taklidi yaptı ve annesi aşağıya indi.* (Zeynep went home and went to her room, she was crying. When she heard her mother coming, she pretended to sleep, and her mother went downstairs.)" It is observed that thoughts are limited because the ideas and expressions in his sentences are not concluded.

When Example 11 was examined, when looking at the post-test sample of the student coded S25 in the experimental group regarding the "Word Wealth" aspect, " *Sınıftakiler Zeynep'i anlayışla karşılamıştı. Ama diğer sınıfların tepkisi farklıydı.* (The people in the classroom were sympathetic to Zeynep but the reaction of other classes was different.)" sentence, it is seen that most words are used correctly in the text, and some words such as the word "*olabilir* [may (be)]" is commonly expressed

in the text. "*O bizim arkadaşımız, farklı olabilir, engelli olabilir. Çünkü o özeldir. Biz onu her haliyle severiz. (*She is our friend, she may be different, she may be disabled. Because she is special. We love her in anyway.)" And the words in the following sentences "*Tuba ve Ahmet yaptıkları için pişman olmuşlardı. Artık hep beraber dost olup birbirlerine yardım etmişlerdi. Tuba ve Ahmet artık iyi bir çocuk olup kimseyle dalga geçmemişlerdi. (*Tuba and Ahmet regretted what they did. Now they became all friends and helped each other. Tuba and Ahmet became now good kids and didn't make fun of anyone.)" are related to the subject and main idea in the text thus it is reasonable to state that the use of words in the text serves the purpose. The last sentence of the story " *Bu yaşananlar da bütün okula ders olmuştu.* (What happened was a lesson to the whole school.)" may be considered as a sign that the text has a conclusion at the end.

Examining Example 12, in the post-test sample of the S25 coded student in the control group regarding the "Word Wealth" aspect, the sentences "*Tekerlekli sandalyede oturmak çok kötü bir şey ben de biliyorum. Ben arkadaşlarımın adına özür diliyorum.* (I also know that sitting in a wheelchair is very bad. I apologize on behalf of my friends.)" reflect the use of words in accordance with the subject of the text. From the sentence " *Yeni gelen arkadaşımızla nasıl dalga geçersin?* (How do you make fun of our new friend?)", it is concluded that the statement is suitable for the purpose of the text. The fact that the subject is exemplified by a proverb in the use of "*Gülme komşuna gelir başına* (he who laughs at someone's misery may meet the same fate)" in the text indicates, from the aspect of word richness, that the whole text is thought and constructed in detail. In addition, the fiction has been strengthened through establishing a direct link with the main idea. However, many words are not spelled correctly as can be seen from the subsequent examples; "examination (muayene)" as "muaniye", "chair(sandalye)" as "sandali". Also, the phrase "*bir şey* (something)" is written compoundly as "birşey" and this may indicate that thoughts may have been rushed into writing.

Examining example 13, the post-test sample of the student coded S20 in the experimental group regarding the "sentence structure" aspect, it is found that the expression "apologizing" is repeated in the text. It is concluded that the sentence structures in the statement " *Zeynep'in arkadaşları empati ne demek çok iyi anladılar ve arkadaşlarına empati duydular* (Zeynep's friends understood what empathy means very well and empathized with their friend)" may need some improvement. In line with this, the sentence " *Siz bir de kendinizi onun yerine koyun siz üzülmez miydiniz* (Put yourself in her shoes, wouldn't you be upset?)", "*Kübra ise şöyle der evet doğru diyor Yağmur hadi gelin Zeynep'ten özür dileyelim* (Kübra says: Yağmur is right, let's apologize to Zeynep.)", "*Yağmur arkadaşlarını toplayıp şöyle dedi arkadaşlar farklılıklara saygı duymalıyız* (Yağmur gathered her friends and says: We should respect differences my friends.)" Although their structures appear to be long and complex, the sentences are actually quite short.

In the analysis of example 14, in post-test sample of the student coded S24 in the control group regarding the "sentence structure" aspect, it is seen that the word "to exclude" is repeated throughout the text. Besides, in the following sentences "*Kimse aldırmamış. Zeynep'in bir arkadaşı vardı adı ise Ali'ydi.* (Nobody cared. Zeynep

had a friend and his name was Ali.)",“ *Ali der ki bunda ne var, Zeynep der ki Emirgiller benimle dalga geçtiler.* (Ali says what is wrong with it, and Zeynep says that Emir's made fun of me.)" it is observed that expressions are short, their structures are simple, and punctuation marks are not used properly. Based on this, " *Çünkü okuyacak ve doktor olacaktı.* (Because he would study and become a doctor),“ in the text, " *Zeynep Ali'ye teşekkür eder.* (Zeynep thanks Ali.)" and " *Ali gider Emir'in yanına gider anlatır sonra Zeynep'ten özür diler.* (Ali goes to Emir, and then apologizes to Zeynep.)" it is found out that the sentences are unnecessarily lengthened and they do not comprise a complex structure.

When example 15, the post-test sample regarding the "Organization" aspect of the student coded S2 in the experimental group, is examined, it is seen that the meaning is supported by logical ideas. The expression " *Siz Zeynebin yerinde olsaydınız Zeynep sizinle alay etseydi* (If you were Zeynep, if Zeynep made fun of you)" in the text indicates that the conclusion part of the text has been correctly constructed and expressed. The introductory sentence was found to be " *Okulun ilk haftalarıydı Zeynep okula gitmişti.* (It was the first weeks of school. Zeynep went to school.)" " *Öğretmen Zeynebe sormuş Zeynep kimler seninle alay etmiş.* (Teacher asked Zeynep 'Who mocked you?'.)" it is concluded that the development section is clearly stated in the text. However, spelling mistakes regarding the separation of inflectional suffixes, especially for proper nouns can be highlighted.

In example 16, the post-test sample regarding the "Organization" aspect of the student coded S19 in the control group, the opening sentence can be seen as " *Okulun açıldığı ilk hafta okula tekerlekli sandalyeyle bir kız gelmiş.* (A girl came to the school with a wheelchair in the first week of the school.)" From this point of view, it is determined that the place, time, and the giving of the person, which are the elements of the stories in the text, are conveyed accurately. With the following statement " *Zeynep'in arkadaşları Zeynep'e bir sürpriz yapmışlar.* (Zeynep's friends made a surprise to Zeynep.)" it can be stated that the smooth flow of ideas changed suddenly. With the statement, " *Sınıfa yeni bir engelli gelmiş ve o yolu kullanmaya başlamış.* (A new disabled person came to the class and started to use that way.)" it is determined that the meaning is supported by logical ideas, and the keywords are emphasized. With the sentence, "*Bu yol artık engelliler yolu olarak anılmaya başlandı.* (This road has now started to be known as the road for the disabled.)" it is concluded that the result is linked to the text and pleases the reader.

When sample 17 was examined regarding the "Writing Style", in the final test sample of the student coded S13 in the experimental group, the sentences "*Tahtada sen bizim arkadaşımız değilsin gibi çirkin sözler yazılmıştı.* (The negative words like you are not our friend were written on the board.)" It could be pointed out that the sentences containing sadness are presented coherently. In the text, " *Zeynep kurtulmuştu kuzeni Fatma'ya çok teşekkür etti.* (Zeynep was saved and thanked her cousin Fatma very much.)" It has been determined that some emotions such as joy and gratitude in the sentence are interconnected. " *Sonra Zeynep arkadaşlarını affetti.* (Then Zeynep forgave her friends.)" in this sentence, it is concluded that the emotions are expressed in an effective way, and the story comes to an end.

Examining example 18 and looking at the final test sample of the student coded S23 in the control group regarding the "Writing Style" aspect, " *Bahadır yanlış bir şey yaptığını anlar ve özür dilerim der.* (Bahadır understands that he has done something wrong and says sorry.)" It was determined that some emotions, such as awareness and sadness, are interrelated in the sentence. At the end of the text, the author said, " *Size bir şey söyleyim, insanların dış görünüşü önemli değil iç görünüşü önemli.* (Let me tell you something, people's character is important, not their appearance.)" Based on the sentence, it is concluded that he reveals the personality of the writer and that the reader may grasp some things about the writer. It was also determined that the student captured a unique style regarding the flow of sentences and the connection details of the sections.

In Example 19, the text of the student S16 in the experimental group is evaluated in terms of "Compliance with Grammar Rules". In the sentence " *Ah! ayaksız merdivenden geçmeyi mi düşünüyorsun? dedi.* (Ah! Are you thinking of taking the stairs without your legs? said.)" the beginning of the sentence with a lowercase letter after the exclamation mark and the use of lowercase letters after the question mark might indicate grammatical and punctuation errors in writing. However, it can be said that choosing and using the exclamatory words and putting an exclamation mark at the end strengthens the writing in terms of expression. It is determined that there is an error in the use of conjunctions in the text. For example, the word "his feed" (ayağı da) is misspelled as "(ayağıda)". Based on this, it is concluded that the words may be written incorrectly, and the spelling needs further improvement. The absence of paragraph indents in the text is another grammatical violation. On the other hand, it is seen that the paragraphs are used in place.

When sample 20 is examined in the final test sample of the S12 coded student in the control group regarding the "Compliance with Grammar Rules" aspect is examined, writing the word "Zeynep'e" as "Zeynebe" in the text stands out as a grammatical mistake. Throughout the text "The bell rang. They got in. The lesson was Mathematics." of the sentence " *Zil çalmış içeri girmişler ders matematikmiş* (The bell rang, they went in, the lesson was math.)" It is also an example of an incomplete and incorrect use of punctuation related to the use of full stop and capital letters. When all these errors are considered together, it is concluded that the correct spelling of the words and the spelling need to be improved.

4 Discussion

It was determined that there is a significant difference between the creative writing pretest and post-test mean scores of the students in the experimental and control groups in favor of the post-tests. In addition, it was found out that the effect of the digital stories applied to the students in the experimental group on creative writing skills was greater than the students in the control group who used the stories on paper. When looking at other studies in this field there are studies showing that digital storytelling is effective in the development of various skills on individuals. From the studies in the literature, it was concluded that digital stories improve students' writing skills (Baki, 2015; Baki & Feyzioğlu, 2017; Başdaş &

Vural, 2017; Çıralı, 2014; Çıralı Sarıca & Tekeli, 2016; Dayan & Girmen, 2018; Demir & Kılıçkıran, 2018; Demirer & Baki, 2018; Gider, 2019; Haşlaman, 2017; Şimşek et al., 2018; Turgut & Kışla, 2015; Yamaç, 2015).

The results indicate a significant difference between the experimental group students' creative writing levels before and after the experimental process. Studies in the literature support this finding and mention that digital storytelling is effective on developing individuals' creativity from different perspectives. For example, whereas Karakoyun (2014) found that the original scenarios created by students in digital storytelling also increased their creativity, Karataş et al. (2016) and Özpınar (2017) focused on creative thinking and found that the digital storytelling activity enabled students to think creatively. Moreover, Kocaman Karoğlu (2015) stated that the digital storytelling process contributes to the development of students' creativity. Another study conducted by Göçen Kabaran et al. (2019) showed that the digital storytelling process facilitates creative ideas. Finally, in the light of the studies of Gider (2019), Campbell (2012), Perez et al. (2016), Coutinho (2010), Jenkins and Lonsdale (2007), Demir and Kılıçkıran (2018), Demirer and Baki (2018), Şimşek et al. (2018), it could be indicated that digital storytelling was effective in the development of creative writing skills of students. All in all, it is reasonable to say that the results of aforementioned studies are in line with the results of this research.

As a result of the current study, it was determined that there is a significant difference between the pretest and post-test creative writing scores of the students in the control group. Considering other studies conducted in this field, it may safely be said that there are studies endorsing the findings of current study mentioning the effect of traditional storytelling on the creative writing skills of individuals and the use of visuals in creative writing skills. Erkan and Aykaç (2014) concluded that literary texts improve students' creative writing skills. At this point, it can be said that visual reading is effective in creative writing. According to Bailey (1995), the use of visual elements is effective in the development of students' creative writing skills (Bailey, 1995, cited in Kırmızı & Beydemir, 2012). These results can be interpreted that paper-based teaching supported by reading has a positive quality in developing students' creative writing skills. It can be considered that the reason for the significant difference is that the flow of the story with the visuals given to the control group affects creative writing.

It was also observed that there was no significant difference in the creative writing scores of the experimental and control groups before and after the experimental procedure. This result can be interpreted as the groups were affected by environmental factors during the process, considering individual differences, previous experiences, and personal characteristics. In addition, it is thought that the reason for the lack of significant difference in the experimental group may be due to the negativity of digital storytelling. That is, as stated by Özpınar (2017) and Uslupehlivan et al. (2017) visuals in digital storytelling cause distraction for students, digital storytelling is a time-consuming process, and students can get bored in this process. Therefore, these can be the reasons for the result section of creative writing scores.

A significant difference was found between pretest and post-test average scores in terms of eight sub-aspects of students' creative writing skills in the experimental group. Considering other studies conducted in this field, it has been determined that there are

studies supporting this finding and mentioning that digital storytelling is effective in the development of many features of writing in the creative writing process of individuals. Yamaç (2015) concluded that digital stories improve students' writing skills in terms of sub-aspects (idea, arrangement, word number, etc.). In addition, Dayan (2017) argued that with digital storytelling, students create regular texts, increase the number of words and sentences, and pay attention to spelling and punctuation. Gider (2019) found that the digital storytelling practice significantly improved students' ideas-content, sentence fluency, editing, writing rules aspects, and writing performance. Xin (2013) observed that digital stories increased in the number of words, complete sentences, and correct words in students' articles. Ballast et al. (2008) found in their study that there was an improvement in the aspects of students' ability to find words suitable for the themes, linking words and establishing connections between sentences. Gregory and Steelman (2009) concluded that digital story increases students' writing skills as well as their ability to create paragraphs and text. Based on these results, the result of current research proposes that digital storytelling may have a positive impact on the creative writing process which includes multiple aspects.

It was determined that there is a significant difference between the pretest and posttest average scores in terms of 8 sub-aspects of the creative writing skills of students in the control group. Other studies conducted in this field validate this finding and reveal that traditional story reading is effective in the development of many aspects of writing in the creative writing process of individuals. A similar study was concluded by Urhan (2016), and the study shows that in the experimental group, tales, support eight sub-aspects of creative writing. Oğuz (2017) found that fairy tales affect creative writing sub-aspects. Based on these results, it can be said that teaching supported by paper reading has a positive effect on the 8 sub-aspects of creative writing.

5 Conclusion

The first sub-question of the study was stated as follows: "Is there a significant difference between the experimental group students' creative writing pre-test and post-test scores?". As a result of the statistics made in this context, it was concluded that the creative writing score average of the experimental group students to whom digital stories were applied increased from the pretest to the posttest. In addition, it was determined that there was a significant difference between the pre- and post-experimental creative writing levels of the experimental group students to whom digital stories were implemented.

The second sub-question of the study was stated as follows: "Is there a significant difference between the creative writing pre-test and post-test scores of the control group students?". As a result of the tests carried out to find out whether there was a statistically significant difference between the creative writing scores of the control group students, to whom the paper reading assisted instruction was applied before and after the experimental procedure, it was discovered that the paper reading assisted instruction applied in the control group was effective in improving the creative writing skills of the students.

The third sub-question of the study was presented as follows: "Is there a significant difference between the experimental and control group students' creative writing

post-test achievement scores?". In order to determine whether there is a significant difference between the creative writing scores of the experimental group students to whom digital stories were applied and the control group students to whom paper-based reading assisted instruction was applied, it can be stated that digital stories did not have a significant effect on creative writing skills as a result of the necessary statistics.

The fourth sub-question of the study was asked as follows: "Is there a significant difference between the experimental and control group students' creative writing achievement scores?". When the creative writing achievement scores of the students in the experimental and control groups are examined; in the creative writing aspect, it was identified that while the average of the students in the experimental group was (X=0.5433), the average of the students in the control group was (X=0.5625). It was also found that there was no significant difference between the creative writing achievement scores of the students in the experimental and control groups. Considering the average score, it can be said that the success in the creative writing process is in favor of the experimental group.

The fifth sub-question of the study was asked as follows: "What is the average score of the experimental and control group students in the sub-aspects of creative writing according to the methods applied to them?". As a result of the statistics; data on the pre-test and post-test scores of the students in the experimental group in terms of 8 sub-aspects of creative writing skills (originality of ideas, fluency of thoughts, flexibility of thoughts, vocabulary, sentence structure, organization, writing style, compliance with rules); originality of ideas in students' writings (Pretest X=2.34; Posttest X =2.57), fluency of thoughts (Pretest X=2.65; Posttest X=3.11), flexibility of thoughts (Pretest X=2 ,42; Posttest X=2.65), vocabulary richness (Pretest X=2.61; Posttest X =3.15), sentence structure (Pretest X=2.42; Posttest X=3.38), organization (Pretest X =2.50, Posttest X=2.96), writing style (Pretest X=2.80, Posttest X=3.65), compliance with rules (Pretest X=3, 03; Post-test X=3.65) aspects, it was recognized that there was an increase in the mean scores before and after the experimental procedure. In the data of the pre-test and post-test scores of the students in the control group in terms of 8 sub-aspects of creative writing skills (originality of ideas, fluency of thoughts, flexibility of thoughts, word richness, sentence structure, organization, writing style, compliance with rules), the originality of ideas in students' writings. (Pre-test X=2.15; Post-test X =2.57), fluency of thoughts (Pre-test X=2.50, Post-test X=2.96), flexibility of thoughts (Pre-test X=1.96; Post-test test X=2.53), vocabulary richness (Pretest X=2.38; Posttest X=2.96), sentence structure (Pretest X=2.38; Posttest X=3.07), organization (Pretest X =2.07; Posttest X=2.50), writing style (Pretest X=2.57; Posttest X=3.26), compliance with rules (Pretest X=2.53; Posttest X=3.19) aspects, it was underlined that there was an increase in the mean scores before and after the experimental procedure.

6 Recommendations

1. It was emphasized that there was a significant difference between the experimental group students' creative writing levels before and after the experimental process. Based on this result, in the context of digital literacy, teachers' skills in using

digital media can be developed and different creative writing techniques can be used to develop students' creativity through digital stories in the classroom.
2. Teachers can integrate a number of activities that improve the students' creative writing skills by increasing the traditional storytelling activity and enriching their environment.
3. It was observed that there is a significant difference between the pretest and post-test average scores in terms of eight sub-aspects of students' creative writing skills in the experimental and control groups. Based on this result, teachers will be able to implement multi-aspectual creative writing process; digital games can be designed to be entertaining, informative, highlighting their creativity and facilitating the writing process.

7 Suggestions for researchers

1. In this study, 4th grade students were studied as a sample. However, in order for the results to be generalizable, studies can be conducted with other grade levels in primary school.
2. This research has been designed and conducted with an experimental design. Considering the validity and reliability of the studies, future research can be supported with a qualitative method, or mixed method studies can be included.
3. This research is planned in listening and writing learning areas. Considering the multimedia elements in digital stories, studies can also be carried out for visual reading or other basic language skills.

Data availability

Availability of data	Template for data availability statement	Policy
Data openly available in a public repository that issues datasets with DOIs	The data that support the findings of this study are openly available in [repository name e.g. "figshare"] at http://doi.org/[doi], reference number [reference number].	All
Data openly available in a public repository that does not issue DOIs	The data that support the findings of this study are openly available in [repository name] at [URL], reference number [reference number].	All
Data available within the article or its supplementary materials	The authors confirm that the data supporting the findings of this study are available within the article [and/or] its supplementary materials.	Basic
Data available on request from the authors	The data that support the findings of this study are available from the corresponding author, [author initials], upon reasonable request.	All

Declarations

Conflict of interest We confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work.

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