

## A Systemic Analysis of Research on Digital Storytelling in Turkey\*

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### Abstract

Today, digital technologies are used extensively in all areas of life, so education has important role to raise individuals who are researching, questioning, and constructing the knowledge. Digital storytelling; Written, visual, audio tools that work together, providing information in a digital environment is a method that allows students to learn with fun. The aim of the study is to compile the studies related with digital story (2005-2019) in Turkey. Descriptive scanning model was used in the study which is one of the qualitative research methods. The studies were examined in terms of their population, sample, years of publication, their universities, the indexes of the journals, their findings and the courses and disciplines that they are preferred most. Also, by including recommendation of the studies, the researchers aims to help teachers to shape their teaching process, experts to improve program features, Ministry of National Education to develop projects on digital storytelling. As a result of the study, it was found that 2017 is the year that the most thesis were published whereas this situation is valid for 2018 in articles. Qualitative methods were preferred in articles generally, and in theses, researchers used quantitative methods. In sample choice, students were the most included group in the studies. When we look at the findings, the most encountered ones were “digital storytelling increases students' motivation, creative and critical thinking skills and problem-solving skills”. The recommendations of the studies were generally was “digital storytelling can be used in different areas and disciplines”, “digital stories can be applied to students in different level and examine different variables”. As a result, the study revealed the increasing importance of digital storytelling with the digital age. Also, it display that digital storytelling enables students learn actively by exploring, help to develop creative and critical skills, and give opportunity to learn by doing.

**Keywords:** Digital Storytelling, Digital Story, Article, Master's Thesis, Doctoral Thesis

**DOI:** 10.29329/ijpe.2020.268.4

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\* This study was presented as an oral presentation in 17th Primary Teacher Education Symposium

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## INTRODUCTION

The constant development of technology eases individuals' life in every aspect. Education is one of the most important areas that technology is used. "Digital storytelling" can be seen as a technological improvement that aims to make learning process more meaningful. Raising individuals who investigate, examine and construct information is the main responsibility of education. Because use of technology would increase the permanency of learning by enhancing different senses in education, it is vital to integrate technology in education.

Digital storytelling is one of the applications that enable the use of technology in education. To develop an understanding about "digital storytelling" concept, it is crucial to examine "narrative text" concept. Erden (2000, p.67) describes narration as "literary communication tools that capable of transmitting intense meanings with few words compressed into narrow spaces". Akbayır (2010, p.66) identify narrating as the type of text in which a person (narrator) refers to a certain point of view of a series of events related to each other by putting in a certain space and time is expressed. Stories are the short texts that include small sections about events that people faced or may face. These events are told by holding to the place and time, and talking about people in one aspect (Kavcar & Oğuzkan, 2004, p.94). Stories are also important tools in transmitting new concepts, culture of the society and social values (Akyol, 2011, p.162). These narrative texts take us to different places than we are in and enrich our imaginary world (Eryaman, 2008; Güneş, 2013).

These definitions can help us to make a general definition of narrative texts. That is, narrative texts can be defined as the text types that describe a person, other creatures, and / or personified objects that process a plot, implement a plot in a given space and time, and eventually aim to teach the reader a lesson. These texts include a structure that increases and attract attention because they include event which is fictionalized or true-life. That is why, the readers internalize the characters in the story, and the fascinating factors are featured in the selected topics.

Definition of digital storytelling should be made as transformed stories to digital format. In general, digital stories are formed by the combination of visual, sound and sound with melody, with the enrichment of the texture that creates a deep impact on people, events, and concepts, and the ease remembering (Rule, 2005). Digital storytelling is a method that gives an opportunity for students to learn by enjoying with the help of using written, visual and audio tools in digital settings. Therefore, digital storytelling process has multi-dimensional and multi-stage structure. As Meadows (2003) stated, digital stories are created by combination of multimedia elements. In this respect, digital stories are a way of presenting narrative texts in an aesthetic manner by enriching with media tools.

Digital stories' structure is about visual expression and visual reading. According to related literature, visualization of the text in a digital setting is crucial in order to display visual expression in a more sufficient way (Çıralı, 2014; Erişti, 2017; Sümer & Eldeniz Çetin, 2018). In visual reading, individuals are expected to infer different meanings and interpretations from texts as a result of semantic and perceptual selectivity. In this sense, visual reading, which consists of the "interpretation" and "meaning" sub-dimensions of the visuals in the texts, has an important role in understanding as it enables each individual to make different meanings from digital stories. While interpreting and interpreting stories through visual reading, it is aimed that individuals understand the plot, time, subject and main idea of the story in depth. In this context, since visual reading and metacognitive thinking skills are also employed, it contributes to revealing and improving the characteristics of individuals such as problem-solving, classification, sorting and concretization.

With the effects of the developments in technology and education, there is a rapid transition about reading materials like books, journals or newspapers in interactive digital screens in schools. Therefore, it becomes possible to maintain processes that require metacognitive skills such as vision, perception, word recognition, understanding, structuring in the mind with these interactive digital screen used in educational settings (Tiryaki & Karakuş, 2019; Odabaş, Odabaş & Sevmez, 2018; Odabaş, 2017).

The first examples of digital storytelling were seen in Joe Lambert and Dana Atchly's studies in 1990 in California (Bull & Kajder, 2004; Chung, 2007; Robin, 2008; Şimşek, 2010). Joe Lambert, his wife, Nina Mullen, and his colleague, Dana Atchley formed Digital Media Center in 1994 in San Francisco. After that, they changed this center as Center for Digital Storytelling in 1998 in Berkeley (Lambert, 2003).

Robin (2006) classify digital stories into three categories what are personal, historical and informative narrations. He also states that there are no sharp distinctions between these categories. Personal narratives; includes stories that are based on experiences from lived events. Historical narratives are about events or people of past. Informative narratives aim to inform people about different topics or concepts.

Digital stories are used in many different topics such as medicine, social services, museums, psychology, history, community participation, youth projects, and non-formal subjects. In educational settings, literature studies, teacher training, creative writing and thinking, social and cultural studies, language teaching can be areas that digital stories can be integrated most (Opperman, 2008; Robin, 2008; McLellan, 2006).

With the consideration of education and technology integration, the benefits of digital stories cannot be underestimated. These benefits can be discussed in terms of both teachers and students. As it addresses more than one senses, it can improve the cognitive, affective and psychomotor characteristics of the students. Also, it brings students together with real-life experiences because it provides the opportunity for students to create their own stories. It helps to create a hands-on learning environment for students. While creating the text process, students can develop skills like problem-solving, critical thinking and creativity. When looked from teacher perspective, it can help to create sufficient learning environment. In classroom management, it can help to increase interest, attention, and motivation toward the class. It can also guide teachers to concrete the abstract subjects. Finally, in changing students' attitudes toward the course, digital stories can be used as an alternative source.

When examined national and international studies on digital storytelling, it was seen that there is a broad area from early childhood to university students which mention benefits of using digital stories for learning (Verdugo&Belmonte, 2007; Sadik, 2008; Heo 2009; Gyabak&Godina, 2011; Kearney 2011; Nguyen, 2011; Hung, Hwang&Huang, 2012; Yang&Wu, 2012; Kocaman-Karoglu, 2014). Moreover, when we looked at the sample groups of the studies conducted in formal education environments, studies were found in all educational levels from early childhood to secondary education (Verdugo&Belmonte, 2007; Gyabak&Godina, 2011; Hung et al. 2012; Foley, 2013; Kocaman-Karoglu, 2015) even to higher education (Kocaman-Karoglu, 2014). In the current study, findings and recommendations of studies conducted in Turkey were presented, so it could be shown as a reference to future studies.

The aim of the current study is not only to reveal studies on digital storytelling in Turkey orderly, but also to detect and discuss the weaknesses of these studies. In the scope of this general aim, the researches tried to answer following questions;

What is the distribution of thesis and articles on digital storytelling published in Turkey in terms of;

- Date of publishing?
- Indexes of the journals (for articles)?
- Key words?
- Methods?
- Population and sample information?

- Data collection methods?
- Data analysis methods?
- Results of the studies?
- Recommendations of the studies?
- The graduate levels (for thesis)?
- The universities that the thesis published?

## **METHOD**

### **Research Design**

In this study, a descriptive survey model which as one of the qualitative research methods was used. The descriptive survey model can be described as making systematic research on journals for a specific topic in terms of publishing data, research methods, findings, etc. (King & He, 2005). Thus, in the current study, articles and thesis were scanned and they were evaluated by analyzing the content.

### **Population and Sample**

The population of the study is consists of all scientific studies conducted in Turkey. On the other hand, the sample of the study includes studies related to “digital storytelling/narrating digital story and digital storytelling methods” that were published between 2005 and the first half of 2019 in Turkey. All studies were chosen from the ones who have open access. In choosing the studies, criterion sampling among the purposive sampling methods was used. Criterion sampling is the process of including people, events, objects or situations that have a specific quality to the sample (Büyüköztürk, Kılıç-Çakmak, Akgün, Karadeniz & Demirel, 2013). Also, choosing studies that were written in Turkish and conducted by Turkish researchers was a criterion in the current study.

The reason why studies conducted between 2005 and 2019 is that the first studies about digital storytelling in Turkey were conducted in 2005 and this process has been continued today. As a result, nine doctoral dissertation, 14 master thesis, and 42 articles were investigated in the current study.

### **Data Collection**

To collect data, a descriptive survey model was used. An extensive scanning from national and international journal sites, database of thesis in Council of Higher Education and Google Scholar. The literature review was limited to studies written in Turkish. With this aim, 37 theses and 53 articles were reached. These studies were founded by using “narrating digital story, digital storytelling, digital text, and digital story” keywords. There were 14 theses and 11 articles that were that did not include in this study because these studies were with no open access, repeated publication in the same database and publication that are not from education departments in universities. Whereas 24 of the studies are about digital storytelling, 15 of them were about narrating digital story, 14 of the studies includes digital text concept and finally, 13 of them were written about digital story.

### **Data Analysis**

After data collection, the data analysis process was performed. In this process, document review method was used. Every written material that provides information about the research topic is

described as document (Balci, 2001). Document review helps to make an analysis for the written materials about research phenomenon (Yıldırım & Şimşek, 2016, p.189). In this scope, 23 theses and 42 articles were analyzed in terms of their content. Therefore, these studies were classified in terms of their similarities, and finally, they were reported with percentages and frequencies.

## FINDINGS

The findings related to research question, “*What are the dates of studies related to digital storytelling published in Turkey?*” are provided Table 1.

**Table 1. Distribution of digital storytelling studies in terms of their years**

Year	Article		Thesis	
	f	%	f	%
2005	1	2,39	0	0,0
2013	1	2,39	1	4,35
2014	1	2,39	4	17,39
2015	6	14,28	5	21,74
2016	8	19,04	1	4,35
2017	17	40,47	5	21,74
2018	6	14,28	6	26,08
2019	2	4,76	1	4,35
Total	42	100,0	23	100,0

As the year distribution of the studies was presented in table 1, 17 articles that are published in 2017 takes attention. When we looked at thesis, the most thesis is published in 2018 with the six thesis. However, whereas 2005, 2013 and 2014 are the years that have fewer articles about digital storytelling, less thesis was founded in 2012, 2016 and 2019.

About the other research question, “*What is the distribution of the thesis according to in which their graduate education level they were prepared?*”, the findings are presented in table 2.

**Table 2. Distribution of the thesis with their graduate education level**

Graduate Education Level	f	%
Master	14	60,86
Doctorate	9	39,14
Total	23	100,0

According to table 2, 39,14% of the 23 theses are prepared at doctorate level while 60%,86 of them belong to master level.

Table 3 presents the findings related to other research question which is “*What is the distribution of the digital storytelling studies in terms of their keywords?*”

**Table 3. The keywords that are used in the studies related to digital storytelling**

Key Words	Article		Thesis	
	f	%	f	%
Digital Storytelling	16	38,09	7	30,43
Narrating Digital story	13	30,96	2	8,71
Digital Story	7	16,67	7	30,43
Digital Text	6	14,28	7	30,43
Total	42	100,0	23	100,0

When looking at table 3 that includes the keywords in the articles related to digital storytelling, digital storytelling (%38,09) and narrating digital story (%30,96) are the keywords that

are most used in studies. On the other hand, digital stories (%16,67) and digital text (%14,28) were less used keywords in the studies. Digital storytelling (%30,43), digital story (%30,43), and digital text (%30,43) are the most used keywords in thesis whereas narrating digital story (8,71) is seen less in those studies.

For the question, “*What is the distribution of the digital storytelling studies in terms of their journal indexes?*”, findings are displayed in table 4.

**Table 4. The distribution of the digital storytelling studies with their journal indexes**

Journal Indexes	Article
	f
TR Index	30
Other National Indexes	14
EBSCO	13
Other International Indexes	12
DOAJ	11
ASOS	11
SOBIAD	8
SCOPUS	3
ERIC	1

Table 4 shows that the most article related to digital storytelling was found in journal in TR Index (30 articles). However, the less article about the topic was found in ERIC. The reason for this situation can be that the sample was limited to studies in Turkey because there are limited journals that are scoured in ERIC.

“*What are the research methods that are used in studies discussing digital storytelling?*” is the other research question and table 5 provides findings related to this question.

**Table 5. Research methods used in the studies related with digital storytelling**

Method	Article		Thesis	
	f	%	f	%
Quantitative	11	26,20	10	43,47
Experimental	8	19,06	10	43,47
Survey	1	2,38	-	0
Correlational	-	0	-	0
Causal Comparative	-	0	-	0
Scale Development	1	2,38	-	0
Single-subject study (alternating treatments design)	1	2,38	-	0
Qualitative	20	47,61	9	39,13
Case study	10	23,80	5	21,73
Action research	3	7,14	4	17,39
Descriptive survey	6	14,28	-	0
Longitudinal study	1	2,38	-	0
Mixed	5	11,90	4	17,39
Quantitative (experimental design with pre-posttest and control group )+	1	2,38	-	0
Qualitative (survey)				
Quantitative (experimental design with pre-posttest and control group)+	1	2,38	1	4,34
Qualitative (interview)				
Quantitative (experimental design with pre-posttest and control group +	-	0	1	4,34
Qualitative (case study)				
Quantitative (Embedded experimental pattern) + Qualitative (interview)	-	0	1	4,34
Quantitative (scale development) + Qualitative (interview)	2	4,76	-	0
Nested mixed pattern	1	2,38	-	0
Descriptor sequence	-	0	1	4,34
Undetermined	6	14,29	-	0
Total	42	100,0	23	100,0

With the consideration of table 5, it can be said that in the articles related to digital storytelling, researchers used qualitative research methods (%47,61) more. At the same time, quantitative methods (%43,47) were used in these more compared to other research methods. Regarding mixed methods, they did not see in digital storytelling stories in common. The reason can be about the need for time and effort that the researcher should spend in mixed methods because both qualitative and quantitative data collection processes are maintained in mixed methods.

Table 6 shows the findings related to the research question that is “What is the population and sample of the studies related to digital storytelling?”

**Table 6. The distribution of the digital storytelling studies in terms of their population and sample**

Population-Sample	Article		Thesis	
	f	%	f	%
Student	21	50,0	19	82,60
Pre-service Teacher	9	21,42	3	13,05
In-service Teacher	2	4,77	1	4,35
Document (studies in electronic databases, book-article, sample pages )	4	9,53	-	0,0
No sample chose	6	14,28	-	0,0
Total	42	100,0	23	100,0

According to table 6, students (%50,0) and preservice teachers (%21,42) are the most preferred sample groups that are included in the articles related to digital storytelling. Similarly, in thesis, students (%82,60) and preservice teachers (%13,05) are the most preferred sample groups. The less preferred groups in articles are teachers (%4,77) and documents (%9,53) whereas they are teachers (%4,35) and in the thesis.

In table 7, the findings related to “What is the distribution of the studies according to the universities that they are published?” question can be seen.

**Table 7. The distribution of the thesis according to their universities**

University	Master		Doctoral	
	f	%	f	%
Adnan Menderes University	1	7,14	-	0
Akdeniz University	1	7,14	-	0
Amasya University	1	7,14	-	0
Anadolu University	-	0	2	22,23
Atatürk University	-	0	1	11,11
Bahçeşehir University	1	7,14	-	0
Balıkesir University	-	0	1	11,11
Erciyes University	-	0	1	11,11
Eskişehir Osmangazi University	1	7,14	-	0
Fırat University	1	7,14	-	0
Gaziantep University	1	7,14	-	0
Gazi University	-	0	1	11,11
Hacettepe University	1	7,14	-	0
Kastamonu University	1	7,14	-	0
Kütahya Dumlupınar University	1	7,14	-	0
Mersin University	2	14,32	1	11,11
Muğla Sıtkı Koçman University	1	7,14	-	0
Ondokuz Mayıs University	-	0	1	11,11
Recep Tayyip Erdoğan University	1	7,14	-	0
Uludağ University	-	0	1	11,11
Total	14	100,0	9	100,0

Table 7 presents the distribution of the thesis in terms is their university. Thus, it is observed that Mersin University with 2 theses (14,32%) and Anadolu University with 2 theses (22,23%) at the master's level stand out. At the master level, it was determined that 1 thesis was made in Bahçeşehir, Muğla Sıtkı Koçman, Recep Tayyip Erdoğan, Kastamonu, Amasya, Adnan Menderes, Eskişehir

Osmangazi, Kütahya Dumlupınar, Gaziantep, Akdeniz and Fırat Universities. At the doctoral level, one thesis was carried out at Gazi, Atatürk, Balıkesir, Ondokuz Mayıs, Uludağ, Mersin and Erciyes Universities.

For the question, "What are the data collection techniques in studies about digital storytelling in Turkey?", findings are listed in Table 8.

**Table 8. Distribution of the studies about digital storytelling according to data collection techniques**

Data collection techniques	Article		Thesis	
	f	%	f	%
Document	20	37,03	24	35,82
Notes	4	7,40	3	4,47
Studies in the electronic database	9	16,66	1	1,49
Daily (student and researcher)	2	3,70	7	10,44
Student products (digital stories)	5	9,25	7	10,44
Video and audio recordings	-	0	6	8,95
Interview	12	22,22	8	11,94
Semi-structured interview	11	20,37	8	11,94
Focus group meeting	1	1,85	-	0
<b>Scales</b> (Achievement tests, written expression evaluation scales, attitude scales, tests, digital story scoring keys, etc.)	8	14,81	5	7,46
Scale + Interview	7	12,96	13	19,40
Scale + Observation	2	3,70	5	7,46
Document + Survey	4	7,40	6	8,95
Survey	1	1,85	6	8,95
<b>Toplam</b>	<b>54</b>	<b>100,0</b>	<b>67</b>	<b>100,0</b>

In Table 8, when data collection techniques of studies of digital storytelling were examined, the most commonly used data collection techniques were documents (37.03%), interviews (22.22%) and scale + interviews (12.96%); In the thesis, documents (35,82%), scale and interview (19,40%), semi-structured interviews (11,94%). The least used data collection techniques in articles were surveys (1.85%) and focus group interviews (1.85%); in theses, studies in the electronic database (1,49%), notes (4,47%), and scales + observation (7,46%).

Table 9 presents findings related to the question, "What are the techniques of data analysis, in studies about digital storytelling in Turkey?"

**Table 9. The distribution of the studies about digital storytelling according to the data analysis techniques**

Data analysis techniques	Article		Thesis	
	f	%	f	%
T-tests	11	15,95	11	20,0
Normality tests	8	11,59	6	10,91
ANCOVA	3	4,34	3	5,45
Wilcoxon tests	3	4,34	6	10,91
Mann Whitney u test	2	2,90	8	14,55
Frequency and percentage	1	1,45	4	7,28
ANOVA	1	1,45	2	3,64
Multiple regression analysis	1	1,45	1	1,81
Factor Analysis	-	0	1	1,81
Chi-square analysis	1	1,45	-	0
Kruskal Wallis H test	-	0	2	3,64
Content analysis	21	30,44	7	12,72
Descriptive analysis	9	13,05	4	7,28
Unspecified	8	11,59	-	0
<b>Total</b>	<b>69</b>	<b>100,0</b>	<b>55</b>	<b>100,0</b>

In Table 9 shows that the most commonly used techniques are; content analysis (30.44%), t-tests (15.95%), descriptive analysis (13.05%) in the articles related with digital storytelling, but this



situation is like t-tests (20.0%), Mann Whitney U test (14.55%), and content analysis (12.72%) in theses. The least used analysis techniques in articles were frequency and percentage calculation (1.45%), ANOVA (1.45%), multiple regression analysis (1.45%), and chi-square analysis (1.45%).

Findings related to the question, “*What are the overall results achieved in studies prepared on digital storytelling in Turkey?*” are provided in table 10.

**Table 10. Overall results of studies on digital storytelling**

Achieved Results	f
Digital storytelling method increases students' motivation, creative thinking, critical thinking and problem-solving skills.	31
The use of digital storytelling in the classroom offers teachers and students the opportunity to integrate multimedia technologies into the classroom.	26
Digital storytelling approach is an effective process that enables interactive, active participation, and enables students to discover themselves and learn by enjoying	24
Digital storytelling allows students to work in collaboration.	17
The problems encountered in the process of digital storytelling were determined to be caused by the inadequacy of technology use.	20
Digital stories make learning easier and embody the abstract, making the lesson more understandable.	16
It emphasizes that the use of digital storytelling in education is a useful technological method and that many features of the individual are developed.	11

According to Table 10, when the general results obtained in studies related to digital storytelling are examined, the most common results are “Digital storytelling method increases students' motivation, creative thinking, critical thinking and problem-solving skills.” (31), “The use of digital storytelling in the classroom offers teachers and students the opportunity to integrate multimedia technologies into the classroom.” (26). On the other hand, the least common results emphasize that “It emphasizes that the use of digital storytelling in education is a useful technological method and that many features of the individual are developed.”(11), and “Digital stories make learning easier and embody the abstract, making the lesson more understandable.” (16)

About the question, “*What are the recommendations of the studies related to digital storytelling?*” the findings are presented in table 11.

**Table 11. Recommendations in studies about digital storytelling**

Developed recommendations	f
Digital stories can be used in different areas and disciplines	25
Digital story activities can be conducted with different level groups and various variables can be examined.	18
Digital storytelling can be used in educational institutions at different levels	15
Digital and interactive books can be used to motivate students	14
Can be used as an effective method to improve listening, speaking, writing and reading skills	10
Digital story libraries can be created	9
Digital storytelling activities can be done in a shorter time interval	9
Courses on digital storytelling at the undergraduate level	9
Various software for digital storytelling cab be created	8
In-service training course can be organized for teachers	7
Experimental studies on the use of digital stories in the special education	3
It can be used for students with visual disabilities for auditory aims and visual aims for students with hearing disability.	2

When we look at table 11, the most mentioned recommendations are “Digital stories can be used in different areas and disciplines” (25), “Digital story activities can be conducted with different level groups and various variables can be examined.” (18). Moreover, the least recommendations are, “Experimental studies on the use of digital stories in the special education” (3), “It can be used for students with visual disability for auditory aims and visual aims for students with hearing disability.” (2), “In-service training course can be organized for teachers” (7).

## RESULTS AND DISCUSSION

The studies related to digital storytelling started in 2005. From 2005 to the first half of 2019, whereas the most number of articles were published in 2017, 2018 is the year that most of the studies were conducted in terms of thesis. The reason can be about the increase of the researchers' and educators' awareness on the topic because 2005 is the beginning year for "Visual Reading and Visual Presentation" that is added to Turkish teaching program in the scope of updates on Turkish Education System. Also, Movement of Enhancing Opportunities and Improving Technology project in 2012 enhanced the use of technology, and give chance to children to use tablet computers that can be used as books and notebooks. Thus, this situation may have increased the attention to digital storytelling. Finally, because constructivist approach takes part in education, integration of technology enhances learning by enjoying and constructing knowledge. Thus, the awareness about importance of technology is increasing in the current education system.

It was observed that the thesis related to digital storytelling is on master level. Whereas the studies of Akgül (2018), Dayan (2017), Büyükcengiz (2017), Yürük (2015), Göçen (2014), Türe Köse (2019), Çıralı (2014), Kutlucan (2018), Ünlü (2018), Çakıcı (2018), Ulum (2017), Keleş (2018), Başdaş (2017), Kaya (2014) are on master level, Ayvaz Tunç (2016), Karakoyun (2014), Tabak (2017), Konokman (2015), Baki (2015), Şentürk Leylek (2018), Ciğerci (2015), Yamaç (2015), Kahraman (2013) prepared their digital storytelling related studies on doctoral level. The reason for this difference can be about the currency of the topic. That is, because it provides convenience to master students, they may prefer to conduct their studies on digital storytelling.

When we look at the keywords used in thesis and articles related to digital storytelling, among the keywords, "digital story/text", "digital storytelling", "digital storytelling method" and "digital story", the most preferred one is "digital storytelling". This concept takes attention on Göçen (2014), Karakoyun (2014), Yürük (2015), Ayvaz Tunç (2016), Büyükcengiz (2017), Dayan (2017), Akgül (2018)'s studies. However, in thesis, in addition to this concept, "digital story and digital text" concepts are also included. Akgül (2018), Ünlü (2018), Tabak (2017), Dayan (2017), Büyükcengiz (2017), Ulum (2017), Ayvaz Tunç (2016), Konokman (2015), Yürük (2015), Baki (2015), Karakoyun (2014), Göçen (2014), Kutlucan (2018), Çakıcı (2018), Keleş (2018), Başdaş (2017), Ciğerci (2015), Yamaç (2015), Kaya (2014), Kahraman (2013)'s studies can be shown as an evidence to use these concepts in the studies. Şimşek, Koçak-Usluel, Çıralı-Sarıca, and Tekeli (2018)'s studies can be shown as an example to use both digital storytelling and narrating digital story concepts together. The main difference in the usage of these terms is that narrative and story concepts are described differently. While narrative is described as a literature product that requires specific techniques and expertise, stories do not include any specific techniques and they are about people's ordinary lives (Şimşek, 2012). This situation can be explained by the differences in Turkish translation of the concepts, "digital storytelling", "narrating digital story", "digital story" and "digital text".

It was found that the digital storytelling studies in Turkey were published in journals that are in TR indexes. The reason why the studies were not obtained in SSCI and SCI indexes and not reached the full text in ERIC index can be about there are little examples of studies that are conducted in Turkey and published in Turkish in those indexes.

It was also found that whereas in articles related to digital storytelling qualitative research methods were used, in thesis, quantitative methods were preferred generally. For example, Başdaş and Vural (2017), Baki and Feyzioğlu (2017), Demir and Kılıçkırın (2018), Sarıtepeci (2017), Sarıtepeci and Durak (2016), Şentürk Leylek (2018), Ünlü (2018), Başdaş (2017), Konokman (2015), Türe Köse (2019), Çakıcı (2018), Büyükcengiz (2017), Yürük (2015) designed their studies with experimental design in quantitative research methods. On the other hand, Keleş (2018), Ulum (2017), Dayan (2017), Dayan and Girmen (2018), Demirer and Baki (2018), Özpınar (2017), Uslupehlivan Erden and Cebesoy (2017)'s studies are examples of case study in qualitative research methods. Among both articles and thesis, mixed methods were the ones that were preferred less compared with others. The

studies conducted by Akgül (2018), Dinçer and Yılmaz (2019), Gömleksiz and Pullu (2017), Kabaran et al (2019), Yılmaz et al (2017) can be shown as evidence for this situation.

The reason behind this situation can be the challenge to maintain both qualitative and quantitative processes together and interpreting and synthesize the entire data. However, when we look at Şimşek, Koçak-Usluel, Çıralı-Sarıca, and Tekeli (2018)'s studies found that mixed methods are used more compared with quantitative methods. It was also found that studies related to digital storytelling are designed with experimental research methods and the process was maintained by reading digital stories to children. However, there were not enough studies in which teachers create digital stories and use them as the main source of the course. In terms of teacher practices, Tabak (2017), Kabaran et al. (2019), Yılmaz, Üstündağ, Güneş and Çalışkan (2017)'s studies take attention. The reason for this can be about teachers' inadequacy in technology use.

When looked at the studies related to digital storytelling, it was observed that in sampling process, children were preferred more by the researchers compared with teachers. The studies that were conducted by Şentürk Leylek (2018), Ünlü (2018), Ulum (2017), Kutlucan (2018), Başdaş (2017), Dayan (2017), Akgül (2018), Türe Köse (2019), Çakıcı (2018), Büyükcengiz (2017), Yürük (2015), Başdaş and Vural (2017), Baki and Feyzioğlu (2017), Bedir Erişti (2017), Dayan and Girmen (2018), Demir and Kılıçkiran (2018), Dinçer and Yılmaz (2019), Eryılmaz and Er (2018), Gömleksiz and Pullu (2017), Gözen and Cırık (2017), Ulum and Yalman (2018), Sarıtepeci (2017), Sarıtepeci and Durak (2016), Sümer and Çetin (2018) can be shown as examples for the studies including children as sample. On the other hand, Kahraman (2013), Kabaran et al (2019), and Yılmaz et al (2017) used teachers in their sample choice. Şimşek, Koçak-Usluel, Çıralı-Sarıca and Tekeli (2018)'s studies provide supportive findings for the current study because they also stated that children are more preferred in studies. This situation can be interpreted that the active role of students in digital storytelling is effective in the process. In addition, when the students are considered to be the target group of digital storytelling, it can be thought that the studies that directly employ them are more preferred.

At the master level, most of the theses were published in Mersin University whereas at Ph.D. level this situation was observed in Anadolu University. After 2005, it was determined that about 20 theses on digital storytelling in prepared in universities in Turkey. Until 2017, an increase was observed in this number. It is remarkable data to see there were just 20 universities published thesis on digital storytelling. This can be interpreted as the fact that digital storytelling facilitates the adaptation to today's 4.0 technology with the digital age.

Documents (notes, studies in electronic databases), diaries (student and researcher), student products (digital stories) and video and audio records were the most preferred data collection tools in the studies related to digital storytelling. Whereas scales and observations were less preferred data collection methods in thesis, this situation was valid for surveys in articles.

In their studies, Bedir Erişti (2017), Dayan and Girmen (2018), Demirer and Baki (2018), Eryılmaz and Er (2018), Gözen and Cırık (2017), Haşlıman (2017), Şimşek, Koçak-Usluel, Çıralı-Sarıca and Tekeli (2018), Şentürk Leylek (2018), Kutlucan (2018), Başdaş (2017), Dayan (2017), Tabak (2017), Türe Köse (2019), Yamaç (2015), Ciğerci (2015), Karakoyun (2014), Kaya (2014), Ayvaz Tunç (2016) preferred documents, on the other hand, scales and observations were used together in Yamaç (2015), Ciğerci (2015), Karakoyun (2014), Ayvaz Tunç (2016), Kutlucan (2018)'s studies. The studies that are conducted by Demir and Kılıçkiran (2018), Dinçer and Yılmaz (2019), Gömleksiz and Pullu (2017), Kabaran et al (2019), Ulum and Yalman (2018), Yılmaz et al (2017), Yürük (2015), Büyükcengiz (2017), Akgül (2018), Konokman (2015), Karakoyun (2014), Kahraman (2013), Keleş (2018) can be shown example for using scales and interviews together.

In their study, Şimşek, Koçak-Usluel, Çıralı-Sarıca and Tekeli (2018) showed that survey, scale, interview, test, document, digital story, daily, observation, learning material, form, student products, field notes, audio, and video recordings were the most preferred data collection tools in the

studies. Also, they argue that the ones who used scale or test sported their data with interviews or observations. This situation can be because of the concern about increasing validity and reliability by using several types of data sources. Students and researcher diaries were used mostly in thesis. This situation could be resulted by the time length for the preparation of the thesis. That is because theses are prepared in long time and diaries include long-time process, they are preferred in thesis rather than articles.

Content analysis is most preferred data analysis methods in articles. On the other hand, in thesis, t-tests were used in analyzing data mostly. When we look at the less used data analysis tool, multiple regression analysis takes attention. For content analysis, Dayan and Girmen (2018), Demirel and Baki (2018), Dinçer and Yılmaz (2019), Eryılmaz and Er (2018), Gömleksiz and Pullu (2017), Haşlamam (2017), Kabaran et al (2019), Kabaran and Karademir (2017), Özpinar (2017), Şimşek, Koçak Usluel, Çıralı Sarıca and Tekeli (2017), Ulum and Yalman (2018), Uslupehlivan Erden and Cebesoy (2017), Yılmaz et al (2017), Ulum (2017), Kutlucan (2018), and Tabak (2017)'s studies can be shown as example. Şentürk Leylek (2018), Ünlü (2018), Keleş (2018), Konokman (2015), Akgül (2018), Çakıcı (2018), Yılmaz et al (2017), Sarıtepeci and Durak (2016), Gömleksiz and Pullu (2017), Demir and Kılıçkırın (2018), Baki and Feyzioğlu (2017), and Başdaş and Vural (2017) used t-test in analyzing their data.

When the results of the studies related to digital storytelling are examined, the most observed result was “*Digital storytelling method increases students' motivation, creative thinking, critical thinking, and problem-solving skills.*” When looked at the related literature, Karataş, Bozkurt and Hava (2016), Kocaman Karoğlu (2016), Kotluk and Kocakaya (2015), Turgut and Kışla (2015), Gömleksiz and Pullu (2017), Haşlamam (2017), Kabaran et al (2019), Özpinar (2017), Uslupehlivan, Erden and Cebesoy (2017), Bedir Erişti (2016), Karataş, Bozkurt and Hava (2016), Tatlı and Bayramoğlu (2015), Tunç and Karadağ (2013)'s studies support the finding about positive effect of digital storytelling on “*creative thinking skills.*” Similarly, Dinçer and Yılmaz (2019), Ulum and Yalman (2018) provides supportive data on its effect on “*problem-solving skills*”, and Gözen and Cırık (2017), Kurudayıoğlu and Bal (2014) provide similar findings on critical thinking skills. Finally, Tatlı and Aksoy (2017), Sarıtepeci and Durak (2016), Şimşek, Koçak Usluel, Çıralı Sarıca and Tekeli (2017) commented about the positive effects of digital storytelling on students “*motivation and interest toward the course.*”

These findings can be explained by how digital storytelling process develops students' different skills and metacognition. Another result of the studies on digital storytelling is that narrating digital stories are used frequently, and both teacher and students integrated multimedia technologies with the courses. This result is similar with the results of Karataş, Bozkurt, and Hava (2016), Tatlı and Aksoy (2017), Demir and Kılıçkırın (2018), Yılmaz, Üstündağ and Güneş (2017), Cığerci (2015), Karakoyun (2014), Ayvaz Tunç (2016) because they also emphasize the importance of information technologies that is a part of digital storytelling process for teachers and students.

Another most observed finding in the studies were “*Digital storytelling approach is an effective process that enables interactive, active participation, and enables students to discover themselves and learn by enjoying.*” Studies conducted by Ulum and Yalman (2018), Bedir Erişti (2016), Eryılmaz and Er (2018), Kocaman Karoğlu (2016), Bedir Erişti (2017), Gömleksiz and Pullu (2017), Ulum (2017), Akgül (2018) provides similar findings in their study. That is they also concluded that digital storytelling “*enhance children to work in cooperation*”

In their studies, Tunç and Karadağ (2013), Kotluk and Kocakaya (2015), Bedir Erişti (2017), Balaman (2015), Kocaman Karoğlu (2016), Eryılmaz and Er (2018), Karakoyun (2014) emphasize the importance of digital storytelling on working in groups. Thus, it can be said that the result of their studies and current study supports each other. Some of the studies in the current study showed that the problems related to digital storytelling are resulted by “*by the inadequacy of technology use.*” Similarly, Bozkurt and Hava (2016), Özpinar (2017), Ayvaz Tunç (2016), Karakoyun (2014) explained how the problems related with technology affect digital storytelling process in negative

ways. “*Digital stories make learning easier and embody the abstract, making the lesson more understandable.*” is another common finding observed in the studies. When looking at related literature, Kocaman Karoğlu (2016), Kabaran et al (2019), Kahraman (2013) provides relevant findings because they argue that digital stories provide more concrete learning experiences to students.

When we looked at the recommendations of the studies related with digital storytelling, the researchers stated that “*Digital stories can be used in different areas and disciplines for future studies*” (Dayan, 2017; Karakoyun, 2014; Tatlı & Aksoy, 2017); “*Digital story activities can be conducted with different level groups and various variables can be examined, Digital storytelling can be used in educational institutions at different levels, Digital and interactive books can be used to motivate student, Can be used as an effective method to improve listening, speaking, writing and reading skills*” (Tatlı & Aksoy, 2017); “*Digital story libraries can be created, Digital storytelling activities can be done in a shorter time interval because digital storytelling is a long process, and teachers and students can have problems.*” (Karakoyun,2014), “*Various software for digital storytelling cab be created*” (Ayvaz Tunç, 2016; Kocaman Karoğlu, 2016; Kotluk & Kocakaya, 2015); “*In-service training course can be organized for teachers because there are insufficient number of studies with teachers*” (Özpınar, 2017; Uslupehlivan Erden & Cebesoy, 2017), “*Experimental studies on the use of digital stories in the special education*” (Demir & Kılıçkiran, 2018; Yürük & Atıcı, 2016; Yürük, 2015) and “*It can be used for students with visual disability for auditory aims and visual aims for students with hearing disability.*” (Yürük & Atıcı, 2016; Yürük, 2015).

### **Suggestion**

With the consideration of the results of the current study, the following recommendations can be made;

The studies related to digital storytelling have increased in 2017 and 2018. In 2023 vision document, government stated that “All digital content will be designed in the context of holistic development of students' listening, speaking, reading and writing language skills.: Opportunities for the teachers will be provided to use digital sources in addition to develop their professional development.: An ecosystem related to developing digital education and teaching by including different professionals and institutions will be created in Turkish Education System.”. Thus, in the light of these statements, thanks to the access to 4.0 technology and increase in screen reading, in order to support this increase in the following years, the digital libraries that include digital stories can be formed universities in Turkey. Also, mobile libraries can be created for the rural areas that do not have internet connection.

It was found that the thesis on digital storytelling is at master level. To increase the number of theses at Ph.D. level, projects that have scholarship opportunities for Ph.D. students can be designed.

While reviewing the related literature, it was observed that there is concept confusion on digital storytelling. That is, there are different statements in different studies on the same concept. Therefore, in order to obstruct the confusion among the terms, digital storytelling, narrating the digital story, digital narratives, and digital stories, some informative brochures, animations, short movies, etc. can be prepared and presented.

In the studies, researchers focused on qualitative and quantitative methods. For increasing the number of studies on digital storytelling that use mixed methods, the academicians can be supported to provide courses in this area for the graduate students.

It was also found that research on digital storytelling focuses on students but the teacher dimension is ignored. Workshop programs, workshops, seminars can be organized to reach and teach more students by involving teachers in the digital storytelling process. For the teachers and students

who cannot use computers at the level to prepare digital stories, digital stories can be prepared and opened to teachers and students free of charge through the commissions to be established by the relevant ministries (Ministry of Culture and Tourism, Ministry of National Education) in accordance with the age and class levels of the students and development stages.

For all universities in Turkey to increase the studies for digital storytelling, digital storytelling competition between universities across Turkey can be planned.

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