

An Overview of Digital Storytelling Studies in Classroom Education in Turkey

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Abstract: The purpose of this study is to analyze the findings of studies on digital storytelling in the field of classroom education in Turkey using the systematic review method and determine the type of distribution that exists. The study analyzed 36 scientific publications made until the end of 2021. ERIC, Web of Science, Ulakbim, Google Scholar and National Thesis Center databases of the Council of Higher Education were used in the selection of the studies. Each of the theses and articles were analysed by content analysis and the results obtained from the research were examined in terms of digital storytelling tools. In the interpretation of the data obtained, tables were used and only frequencies were included numerically in the tables. As a result of the analysis, it was observed that the outputs of all categories in the studies using desktop applications were mostly obtained from Photostory. When we look at the results of the studies in which web-supported tools were used, it was determined that the cognitive outputs were mostly obtained from the studies in which Powtoon and Tondoo tools were included in the implementation process. Similarly, the data revealed in terms of social and teaching aspects were obtained from studies dealing with Powtoon as a digital storytelling tool. Goanimate software was generally used in studies involving technological and affective findings. It was determined that the results evaluated under the psychomotor title were generally obtained from studies in which Goanimate and Storyjumper were used. Based on these results, in order to reach web 4.0 technology, virtual libraries that contain digital stories can be created in schools in Turkey. In rural areas that are unable to access the Internet, mobile libraries can be prepared.

Keywords: Digital Storytelling, Classroom Education, Systematic review

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Introduction

Advances in technology that have occurred or been experienced have accelerated the conduct of more scientific studies (Aydın, 2018). As a result of these developments, the thoughts concerning the characteristics of students began to change (Tumay & Köseoğlu, 2011). Therefore, it has been emphasized that today's education should give individuals life skills such as communication, problem solving and critical thinking, as well as knowledge skills such as science literacy (İspir & Yıldız, 2021). These skills, which are generally expressed as 21st century skills, have been among the main topics of many educational research (Binkley et al., 2012). Therefore, diversity has been provided in many tools and resources, as well as different methods and techniques in educational environments (Smeda et al., 2014). In this context, stories have come out as one of the methods in which students can play an active role in the learning environment and reveal their own products by doing and experiencing (Robin, 2008).

Kukul and Kara (2019) described stories of various types as effective tools for communicating any message or passing on people's experiences and knowledge to future generations. Thus, storytelling has been used throughout history for the preservation of heritage through learning-teaching strategies (Condy et al., 2012; Wang & Zhan, 2010). In other words, storytelling, which has been used in the transfer of knowledge from one generation to the next, has been a popular and effective tool from ancient times to the present (Smeda et al., 2014). In this context, stories were considered as the oldest form of education (Reinders, 2011). From this aspect, storytelling has been considered as a natural way of human communication used to better understand complex ideas, concepts or information (Chung, 2006). In addition, as Raven and O'Donnell (2010) stated, the stories were used to strengthen the message given since the meddahs by making use of dance, poetry and music. However, today, this situation necessitated creating a different meaning from the current understanding with the technological explosion and globalization, and traditional life has started to transform as a necessity. Turkish education policies and system have also been directly affected by all these changes. Thus, as of 2006, the constructivist approach has been adopted in the Turkish National Education System and the effective use of technology in education has become a necessity (Yürük & Aıcı, 2016). In this respect, stories that are constantly used in education have been moved to digital environments especially with the development of technology, and Web 2.0 tools. Thus, recently emerging digital storytelling has become a frequently used method for integrating technology into educational environments (Kukul & Kara, 2019).

The foundations of digital storytelling, which has been popular in recent years, are based on digital storytelling centers established in San Francisco, under the leadership of Joe Lambert, his wife Nina Mullen, and her colleague Dana Atchley in the mid-1990. Today, this movement has now spread across the United States to large countries like China and has rapidly expanded worldwide (Mangal, 2020). In this process, many definitions and descriptions of digital storylines were made and most of them were shaped around similar ideas. The aforementioned definitions have often focused on storytelling and the

integration of different digital media tools. Therefore, digital storytelling can be defined as modernizing or electronically describing traditional storytelling with technology in the most basic sense (Razmia et al., 2014; Reinders, 2011). In addition, digital storytelling can be expressed as a technology application that is positioned to enable users to take advantage of the content they contribute and teachers to use the technology efficiently in their classrooms (Robin, 2008). Digital storytelling, on the other hand, can be explained as a developing technique that helps people tell their real lives using digital elements such as text, pictures, audio and video (Song et al., 2012).

Multimedia elements mentioned above are often combined using computer software to tell stories that are shaped around a theme or subject. Students and teachers can use free or low-cost, user-friendly, interactive Web 2.0 tools such as Toondoo, Goanimate, Storyjumper (Nelson et al., 2009; Robin & Mcneil, 2013) and computer software such as Microsoft Photo Story 3, Microsoft Windows Movie Maker. This allows multimedia presentations to be combined from scratch or the applications of independent web service providers to be integrated. These digital stories have a relatively short format and a length of between 2 and 10 minutes. They are recorded digitally via a computer or other device that can play video files. In addition, digital stories can typically be uploaded to the Internet via any popular web browser (Robin, 2016). In this respect, digital storytelling can be considered a short, personal, esthetic, creative element based on the use of multimedia tools to create stories and share information (Meadows, 2003; Sawyer & Willis, 2011). Taking into account the definitions in the literature, digital storytelling can be described as an artistic and innovative method in which scenarios made on a particular topic are digitalized using multimedia tools; an effective pedagogical tool that enables students to develop skills such as communication, collaboration and reflection. This means that digital storytelling is important for individuals to develop and move forward and serves different functions.

Developing digital storytelling, above all, allows students to combine digital images and verbal expressions to tell their own stories (Kajder & Swenson, 2004). Digital storytelling helps to support all the skills required for the 21st century such as visual literacy and collaboration. It also encourages creativity and problem solving (McLellan, 2006). Digital storytelling allows users to interact more and shape the story rather than just traditional storytelling, where the users are only listeners (Dörner et al., 2002). Digital storytelling also gives the user the opportunity to apply the story in real life by giving control to the user and to reinforce it by repetition (Balaman, 2016) and to think about how to create story content by animating it in their minds. As a result, as the literature review revealed digital storytelling can be considered a strong model for creating constructivist e-learning environments. However, the novelty of learning technology, the difficulty of creating a meaningful narrative, and the combination of the relevant images and the choice of sounds creates noise when trying to reconcile with the preexisting schema in the mind (Garcia & Rossiter, 2010). In the digital storytelling process, those who have not written a story before can have difficulties in making fiction and determining characters (Erdoğan, 2021). In addition, other problems are that digital storytelling is not appropriate for all levels (Aslan & Kazu, 2021) and is not available for

its intended purpose if it is perceived as a game (Karaoglan-Yılmaz et al., 2018). Therefore, studies are being carried out on which steps digital stories will be followed.

In terms of how to create digital stories, researchers have shown different stages with different numbers and names. Wawro (2012) described the digital story creation process in six stages. In the first stage, stories for the selected topic are written. The stories that are written are then recorded. In the third stage, the images should be collected or created, and in the fourth stage, they should be added to the software. Then, effects are given to the film if the software is suitable. In the final stage, the work is converted to video format. Barrett (2009), on the other hand, collects the stages in the process of creating digital stories under six headings: developing a scenario, audio recording and editing, collecting visuals, combining sound and footage in a timeline and adding music tracks, using optional effects, presenting and publishing. Although the process of creating digital storytelling is explained with different names and stages in the literature, it is seen that this process consists of basic elements such as creating text, vocalizing, collecting pictures, adding music and presenting the digital product. This means that effective digital storytelling is the result of the integration of multimedia sources such as the appropriate amount of text, audio, image and video (Chung, 2007). In this context, the specified elements can be combined by using some computer and web software in the digital storytelling process. In addition, the stages expressed can be discussed in many areas such as art and health, where digital storytelling is emphasized.

Digital storytelling, which is used in different vocational branches, has also been integrated into education. Therefore, it is used as a learning tool in schools and teaching programs. As a result of the changes in students' interests, expectations and needs, it can be argued that digital storytelling is a powerful tool for students and teachers in educational environments (Robin, 2006). In this way, students can gain desired behaviors through digital storytelling, which can be effective in creating change in individuals. In addition, in digital storytelling, if the stories are not made into a routine and prepared in different ways, both the motivation and success of the individuals for the lesson can increase. Digital storytelling applications, which will be created by considering the listed stages, can enable individuals to be more effective in education and contribute to more reliable and valid results in research on digital storytelling. An inclusive framework for creating digital stories is needed to facilitate exploitation of the stated benefits.

When the literature is examined, it is observed that there has been an increase in research on digital storytelling in Turkey in recent years. As a result of various researches on digital storytelling in learning environments, digital storytelling has been determined to help enrich the learning environment and learning experiences in the classroom (Sadik, 2008), and increase academic success, motivation and learning strategies (Demirer, 2013). Digital storytelling contributes to developing creative thinking (Karakuş et al., 2020; Özen & Duran, 2021) and thus empowering students intellectually and culturally (Benmayor, 2008). On the other hand, digital storytelling improves writing performance (Gider, 2019) and raises the attitude towards the course and the entrepreneurial spirit (Mangal & Kurtdede-Fidan, 2022). In this respect, the results of digital storytelling studies

conducted at each stage of the education, including kindergarten (Preradovic et al., 2016), primary school (Niemi & Niu, 2021), secondary school (Özen & Duran, 2021), high school (Ayvaz-Tunç, 2017) and university (Aslan & Kazu, 2021) were generally found to be similar. This shows that the method is suitable for all ages and is versatile. However, Karademir (2020) concluded that digital storytelling does not make a significant difference to the development of collaboration and communication subskills compared to traditional storytelling. This result may be due to the fact that the technological fiction of the story could not be created effectively or was performed incorrectly. Thus, it can be said that correct guidance and good preparation can positively influence the skills that are intended to be gained by increasing both the direct and indirect impact of digital storytelling.

When the national literature was examined, no systematic review studies were found on digital storytelling research in the field of classroom education. In addition, there is no study in the literature that examines the results of digital storytelling in terms of tools. In this context, it is seen that the software that facilitates digital story development and the important points about the software are not presented clearly enough. This study is thought to provide guidance on digital storytelling tools and the results obtained by using these tools. Since digital storytelling tools are analyzed in depth in the study, it is expected that the findings will shed light on those who will do research on digital storytelling. In line with the stated reasons, the aim of the study is to analyze the results of the studies on digital storytelling in the field of classroom education in Turkey with the systematic review method and to determine what kind of distribution exists. Within the scope of this purpose, answers to the following questions were sought:

In Turkey, digital storytelling studies carried out in the field of classroom education;

1. How was it evaluated in terms of the scientific process?
2. How was it evaluated socially?
3. How was it evaluated in terms of technology?
4. How was it evaluated in terms of teaching?
5. How was it cognitively evaluated?
6. How was it evaluated in terms of psychomotor perspective?
7. How was it evaluated in terms of affective perspective?

Methodology

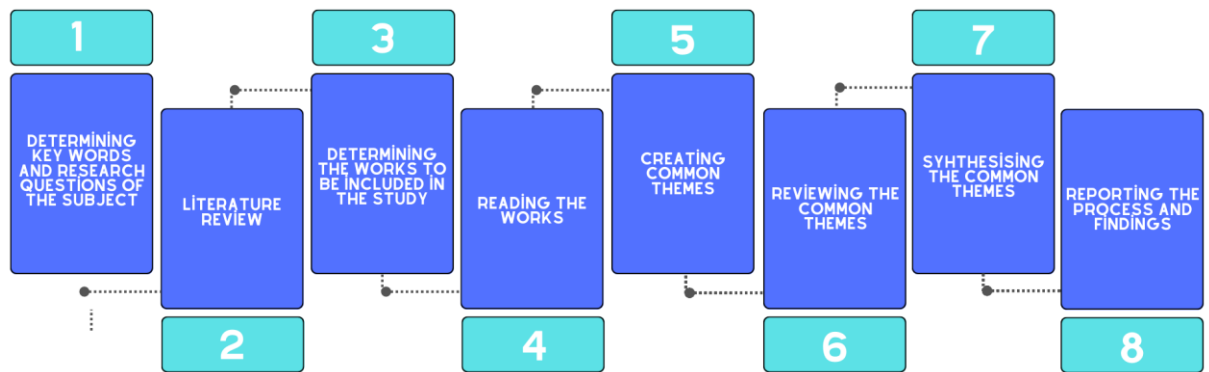
Research Design

This research is a systematic review study. A systematic review is a means of identifying, evaluating and interpreting all available research on a particular research question, topic area, or phenomenon of interest (Denyer & Tranfield, 2009; Kitchenham, 2004).

In systematic reviews, it is known that the data or results obtained from quantitative and qualitative studies are clearly integrated (Pluye & Hong, 2014). For this reason, a total of 36 studies, including 16 theses and 20 articles on digital storytelling, conducted in the field of Classroom Education in Turkey, were analyzed by the researchers. The stages followed in this process are shown in Figure 1 based on the study of Polat and Ay (2016).

Figure 1.

Stages Followed in the Research Process



Data Collection

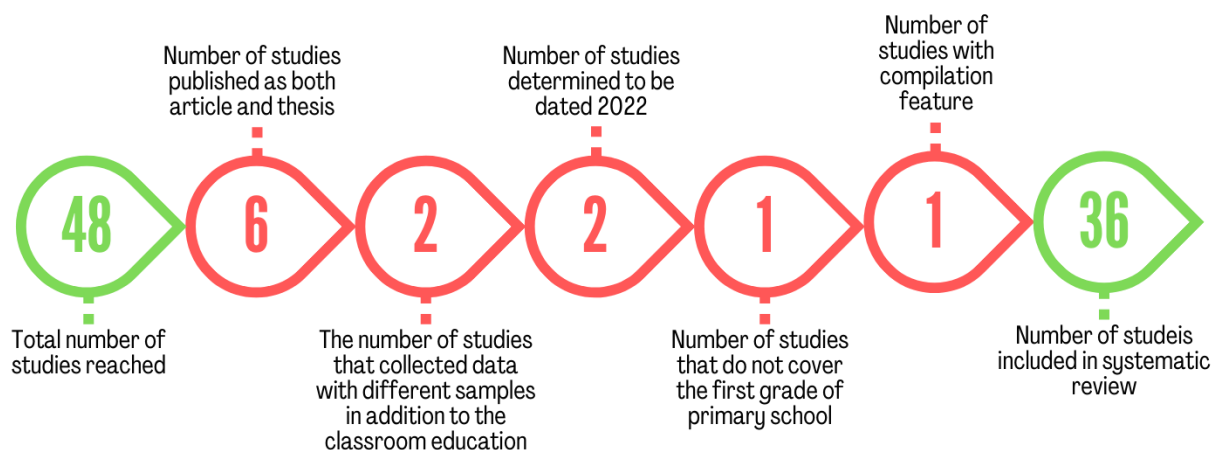
As academic publication types, articles and postgraduate theses were included in the research. In the study, the keywords "digital narrative, digital story, digital storytelling," were used for searching. According to the keywords identified, the literature was searched from the databases of ERIC, Web of Science, Ulakbim (TR Directory), Google Scholar and the National Thesis Center of the Council of Higher Education. As a result of the scanning, a total of 48 scientific studies, 24 articles and 24 theses, were identified in accordance with the selected topic. Subsequently, the abstracts of the publications were read carefully by the researchers. In cases where the summaries of published articles and theses were not considered sufficient to make a decision, the entire text was examined. Thus, studies that did not meet the selection criteria were excluded from the analysis. In this respect, in addition to classroom education, data collected (n=2) with different samples and determined to be dated 2022 (n=2) were not analyzed. Although the phrase "primary school" was mentioned in the title, 6 scientific studies that were not conducted with primary school students or teachers (n=1) and had the feature of compilation (n=1) were excluded. In addition, only studies published as articles (n=6) were taken into account in order not to repeat the data in studies published as both articles and thesis. For the theses and articles included in the research, the selection criteria listed below were taken into account and the flow diagram for the inclusion process of the documents is presented in Figure 2.

- Research is located in ERIC, Web of Science, Ulakbim (TR Directory), Google Scholar or National Thesis Center of the Council of Higher Education.
- The title, summary or keywords contain one of the phrases "digital story", "digital narrative", "digital storytelling",.

- The research was published by 31 December 2021 at the latest.
- The people who make up the study group are selected only from the field of classroom education (primary school first level students, classroom teachers or classroom teacher candidates).
- The research was conducted in Turkey.
- The full text of the research is available or accessible.
- The research is whether an article or a thesis.
- The studies are written in English or Turkish.
- The purpose, method, study group, data collection tools, data analysis, findings and results should be expressed clearly, and intelligibly in the research.

Figure 2.

Selection of Documents Suitable for Systematic Review



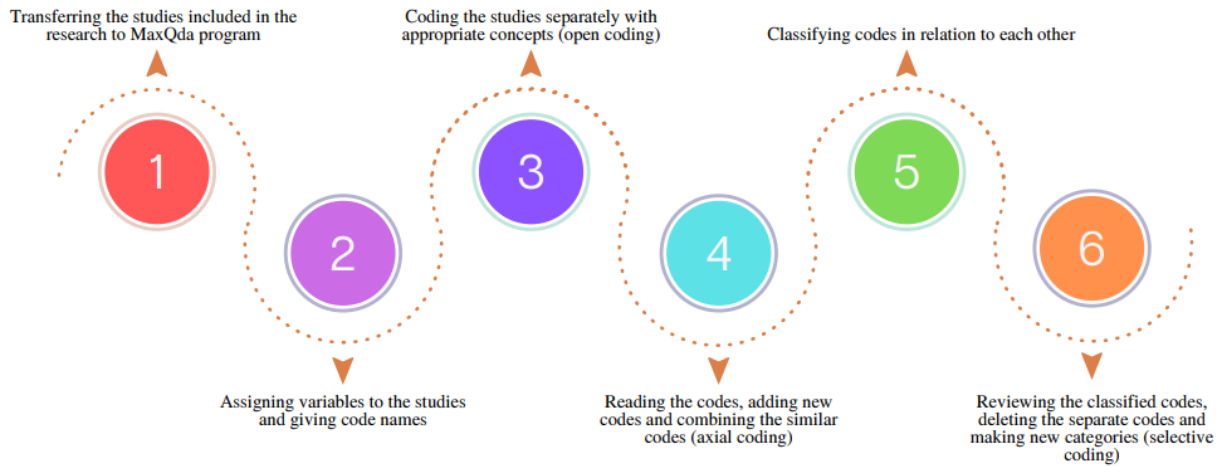
Coding Process

First of all, the sections related to the categories of each study included in the research were read in detail in the MaxQda 2022 program. In addition, each study examined was named as A1, A2, A3... A36 in order to avoid data confusion and these code names were used in the study. Then, all the documents included in the study were examined and coded in terms of the main categories considered. All coding was completed in three stages in a controlled manner. Three stages are classified as open coding, axial coding and selective coding (Neuman, 2012). Within the scope of open coding, the basic outputs, findings and results in the studies examined were coded separately for each study with appropriate concepts. In the axial coding phase, the studies were read in depth and adding new codes to the first encoding and combining similar codes in subsequent studies. At the end of this process, the codes were classified in relation to each other in order to obtain common categories. In selective coding, another selective reading is performed to identify new codes that may be relevant to previously generated codes. Classified codes were reviewed, identical codes were deleted, codes that were not in the appropriate category were removed or revised, and new categories were created. After the coding processes of the studies included in the research were carried

out, the frequency values for the main and sub-categories were determined. The stages followed in the coding process are shown in Figure 3.

Figure 3.

Stages Followed in the Coding Process



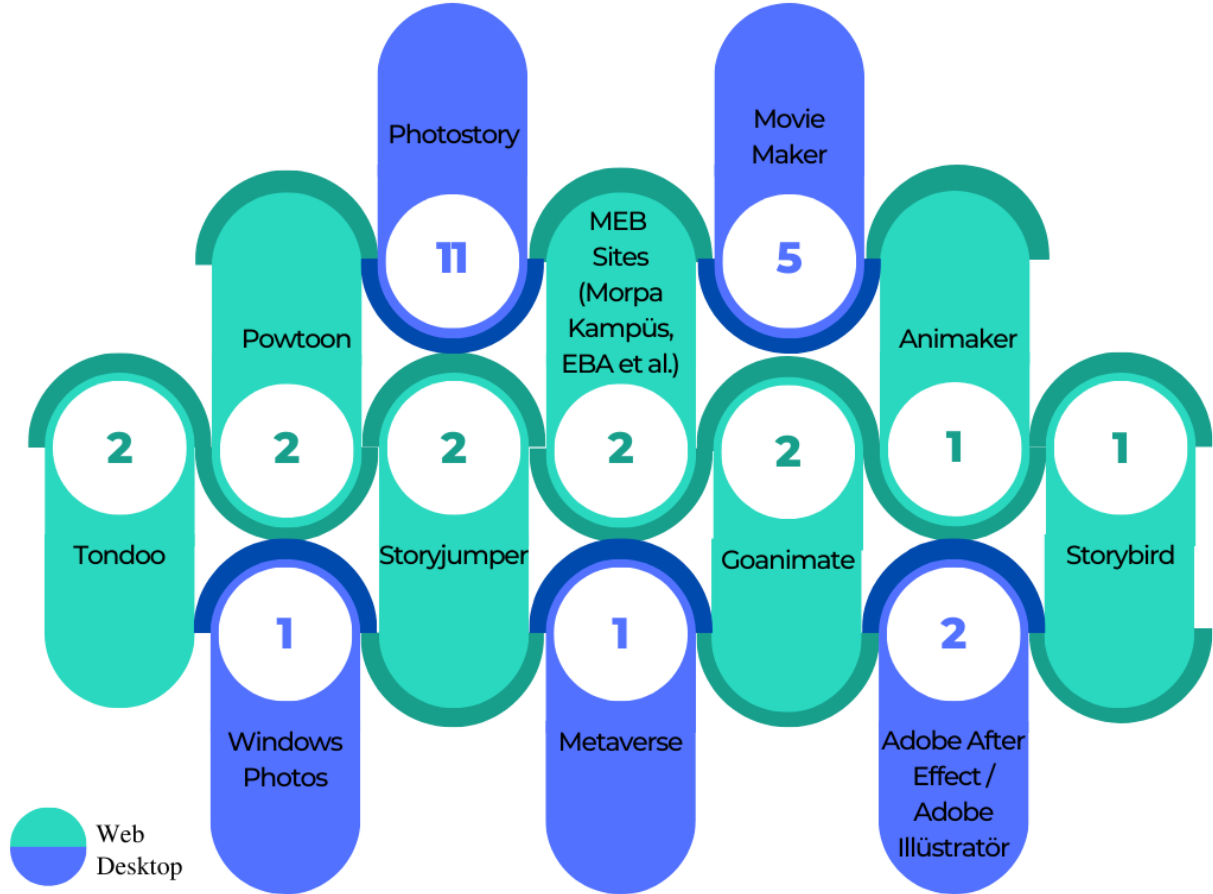
Data Analysis

A comprehensive content analysis was done with the documents. Content analysis, which is frequently used in the field of social sciences, is a systematic and repeatable analysis method in which a text is summarized in smaller categories with certain coding (Büyüköztürk et al., 2015). The studies examined in the research went through some stages while being subjected to content analysis. After accessing the publications used in the research, first of all, the studies were divided into categories in terms of main criteria. In this respect, tables have been prepared in order to present the studies included in the research as a summary. The main reason that the data was presented like this is to provide an idea at first glance about the studies investigated and to increase the visibility. Only frequencies are given numerically in the tables. The frequencies reached as a result of the content analysis allow comparisons to be made for the classifications created during the analysis of the studies. However, numerical expressions are considered important in terms of revealing whether similar results are obtained if the study is repeated.

When the results of 36 digital storytelling studies carried out in the field of Classroom Education in Turkey are considered in terms of the tools, it was seen that no explanation was made about the digital storytelling tool used in 7 studies (A2, A3, A7, A8, A19, A26, A27). In another study (A25), it was found that sample tools such as Prezi, Powtoon and Moovly were introduced before starting the teaching practices, but it was not clearly specified which digital storytelling tools would be used. However, in 6 studies (A10, A13, A17, A20, A23, A31), it was found out that two digital storytelling tools were used together. The stated digital storytelling tools and the number of their use in the studies are shown in Figure 4.

Figure 4.

Digital Storytelling Tools and the Number of Tools Used in Studies



In addition to the digital storytelling tool, the other components examined in the studies and used in this research are the sample level and the implementation time. The sample of the studies that are considered generally consists of primary school students (18 studies in fourth grade, 5 studies in third grade, 4 studies in second grade) and undergraduate students (6 studies in third grade, 2 studies in second grade, 1 study in fourth grade). In one study, classroom teachers and undergraduate students were preferred as samples, but undergraduate degrees were not specified. In addition, when looking at the studies examined, it was seen that digital storytelling tools were generally limited to 6-10 weeks (n=15). In addition, it was determined that 6 studies were completed within 1-5 weeks; 7 studies were carried out for 11-15 weeks and 8 studies did not directly include the implementation period. Considering the aforementioned components, a general interpretation was made under each table and the prominent parts of the studies were discussed according to their importance.

Validity and Reliability of the Research

In order to ensure validity and reliability in this study, the strategies listed by Yıldırım and Şimşek (2018) were used. The research primarily identified the selection, number and

exclusion reasons for the documents to be used in systematic review. The studies were examined for three months after they were downloaded from the databases in order to avoid any errors during coding. Thus, long-term interaction and depth-oriented data collection processes were carried out in the research. Subsequently, coding was done considering the research questions. For the validity of the codings, the analysis was reviewed in line with the main categories for a month and coding were found to be largely consistent. In addition, after the coding process was completed, necessary corrections were made by consulting a faculty member who is an expert in his field. The final version of the coding system and the code names assigned to the studies that constitute the study group are given additionally.

The purpose and questions of the study were clearly expressed to ensure validity and reliability. The data collection method and inclusion criteria were clearly explained for the validity of the findings. In addition, detailed explanations were made about the number of studies included in the research and their limitations. The analysis of the data and the creation of common themes are presented in detail. In addition, all the findings obtained from the studies were conveyed using descriptive expressions and direct quotations were used with the explanations given under each category.

In order to ensure the coding reliability of the study, a total of 4 publications (approximately 10% of the studies), 2 theses and 2 articles, were coded by the first researcher at two different times according to the coding template. The reliability of the codings and the level of compatibility with each other were calculated with the "inter-research agreement calculation" formula suggested by Miles and Huberman (1994):

$$\text{Reliability} = \left[\frac{\text{Consensus(Na)}}{\text{Consensus (Na) + Differences of Opinion (Nd)}} \right] \times 100$$

As a result of the calculation done with the above-mentioned formula, it is expected that the compatibility between the codes will be over 90% (Miles & Huberman, 1994). For this study, the coding concordance value performed by the researcher at two different times was determined as 89.5% and the relevant results are shown in Table 1.

Table 1.

Reliability Between Researchers' Codings at Different Times

Data Set	Amount of Match (Na)	Amount of Mismatch (Nd)	Percentage of Match (%)
A17	3	0	100.0
A18	11	2	84.6
A30	17	1	94.4
A34	3	1	75.0
Total	34	4	89.5

As a result of the second coding process, it was determined that creative thinking and enriching the course in the A17 coded study were different from the first coding. In

addition, it has been determined that communication for A18 coded study and the efficient use of time for the A30 coded study does not match with the first coding. These matching values show that the coding system of the study is reliable. All the validity and reliability measures carried out are presented in Table 2 in a holistic manner.

Table 2.

Practices on the Validity and Reliability of the Research

Strategy	Precaution	Practices
Internal Validity (Credibility)	Expert review	Expert opinion was sought on the subject of the research and the coding, and evaluations were made.
	Long-term interaction	In order to avoid any errors during coding, the studies were examined for three months after they were downloaded from the databases. For the reliability of the coding, the analyzes were reviewed for one month in line with the main categories.
	Using direct quotes	The results are presented in a descriptive way and direct quotations are frequently included.
External Validity (Transferability)	Detailed description	All stages of the research process are presented to the reader in a clear and detailed manner.
Internal Reliability (Consistency)	Compatibility between coders	The concordance values of the coding performed at two different times by the researcher were calculated.
External Reliability (Confirmability)	Verifiability of the research	In order to verify the findings reached as a result of the research, all the data obtained, the qualitative analysis of the data and all the documents related to the study were kept by the researcher.
		Thesis and articles, which constitute the study group of the research, and the coding system are shown as an appendix. The selection of the studies examined within the scope of the purpose and the reasons for the exclusion of the studies are stated.

Findings

In Turkey, the results of the digital storytelling studies carried out in the field of Classroom Education in terms of scientific process, social and technological aspects were examined in depth in terms of the tools. The general distribution of the data obtained as a result of the examinations is presented in Table 3.

Table 3.

Results Obtained in terms of Scientific Process, Social and Technological

Scientific Process, Social and Technological Outcomes	Scientific Process		Social		Technologic		Total	
	Doing Research	Cooperation	Bilateral Relations	Communication	Computer Use	Technological Literacy		
Web	Powtoon	-	A21	-	A21	-	-	2
	Tondoo	-	-	-	-	-	-	-
	Goanimate	-	A18	-	-	A12, A18	A18	4
	MEB Websites	-	-	-	-	-	-	-
	Animaker	-	-	-	-	-	-	-
	Storyjumper	-	-	-	-	-	-	-
	Storybird	-	-	-	-	-	-	-
Desktop	Photostory	A16, A30	A16, A30, A36	A30	A30	A4, A30, A31, A33, A34, A36	A36	14
	Moviemaker	-	-	-	-	A31	-	1
	Metaverse	-	-	-	-	-	-	-
	Windows Photograph	-	-	-	-	-	-	-
	Adobe After Effect	-	-	-	-	-	-	-
	Adobe İllustratör	-	-	-	-	-	-	-
	Total	2	5	1	2	9	2	21

Considering Table 3, it has been found out that social outputs are mostly obtained through desktop applications. It has been seen that only Photostory is used among the programs. According to the findings in this program, it was seen that cooperation was supported the most. On the other hand, it was observed that the communication and relationship dimension were addressed the least. Social outputs obtained through web software were obtained from studies using Powtoon and Goanimate tools. When the studies using these software were examined, three conclusions were reached about cooperation and two about communication. In the document coded A21, which is one of the related studies, different results were encountered for both cooperation and communication. For example, in the quantitative part of the study, it was determined that digital story applications did not have any effect on cooperation and communication sub-skills. This case was described in the study as, " it was concluded that Digital storytelling applications performed by the second-grade gifted students in primary school

did not have any effect on cooperation and communication sub-skills from learning and renewal skills." In the qualitative part of the same research, based on student opinions and the diaries that the researcher kept in the process; it has been stated that digital storytelling contributes to cooperation and communication skills. In another study (A18), it was underlined that digital storytelling provides peer learning as well as cooperation, and in this respect, "That they did digital storytelling studies in small groups provided the students work in cooperation and peer learning." statement is included. In general, it is noticeable that cooperation is coded the most among social outputs. In studies where no digital storytelling tool is specified (A2, A7, A27); cooperation, communication, peer relations, life and career skills are discussed. It has been observed that the outputs for these dimensions have positive effects.

On the other hand, considering Table 3, it was determined that technological outputs are mostly obtained through desktop applications. It has been determined that only Photostory and Movie Maker are used within the applications. When the findings in these applications are examined, it has been observed that computer and internet usage is mostly discussed, and technological literacy is mentioned the least. Similarly, the technological outputs obtained through web-based applications were only obtained from studies using the Goanimate software. When the studies using this software are examined, two conclusions regarding computer and internet usage and technological literacy have been reached. In general, it is noticeable that the most computer and internet usage is coded among the technological outputs. It was revealed that both computer use and technological literacy were the subjects in studies (A7, A25, A28) where digital storytelling tools were not specified. It has been observed that the outputs for these dimensions have positive effects. However, in the study coded A31, some technological difficulties encountered in the digital story creation process were mentioned and at this point, "As a result of the data analyzes, the difficulties encountered in the digital story creation process were studied after they had been divided into six categories, including the audio record not working simultaneously with the images, not being able to create an ideal scenario, not being able to find an appropriate image for the scenario, audio disconnection during image transition, difficulties in finding background music, and difficulties in using the program." statement has been made. Therefore, a preliminary study can be done for technologically incompetent students to acquire basic computer skills before using digital storytelling applications.

On the other hand, according to Table 3, it was determined that scientific process outputs were obtained through desktop applications, and no scientific process output was obtained in studies where web tools were used. Only Photostory has been found to be used in desktop applications. When the findings in the aforementioned program were examined, it was observed that results were obtained only on the ability to conduct research. In the studies (A3, A26) where no digital storytelling tool was specified, the ability to interpret was the subject. the outputs for this skill have been determined to conflict with each other. In the document coded A26, it is stated that digital storytelling improves students' skills in interpretation. However, in the A3 coded document, it is claimed that digital storytelling can lead to misinterpretations.

In Turkey, the results of digital storytelling studies conducted in the field of Classroom Education were examined in depth in relation to the tools. The general distribution of the data obtained as a result of the investigations is presented in Table 4.

Table 4.

Results Obtained in terms of Teaching

Teaching Outcomes		Making the Lesson Fun	Ensuring Active Participation	Bringing a Different Perspective to Teaching	Making the Lesson Efficient	Making the Lesson Easier	Using Time Efficiently	Summarising the Lesson	Time Consuming	Being Exhausting	Total
Web	Powtoon	A21	-	A21	A21	-	-	-	-	-	3
	Tondoo	A23	-	-	-	-	-	-	-	-	1
	Goanimate	A18	A18	-	-	-	-	-	-	-	2
	MEB Websites	-	-	-	-	-	-	-	-	-	9
	Animaker	A6	-	-	-	-	-	-	-	-	1
	Storyjumper	-	-	-	-	-	-	-	-	-	-
	Storybird	A1	-	A1	-	-	-	-	-	-	2
	Photostory	A16, A30, A33	A30, A31, A36	A30	-	A31	A31	A31	A30	A30	12
Desktop	Moviemaker	-	A31	-	-	A31	A31	A31	-	-	4
	Metaverse	-	-	-	-	-	-	-	-	-	-
	Windows Photograph	A24	-	-	-	A24	-	-	-	-	2
	Adobe After Effect	-	-	-	-	-	-	-	-	-	-
	Adobe İllustratör	-	-	-	-	-	-	-	-	-	-
Total	9	5	3	1	3	2	2	1	1	27	

Considering Table 4, it has been determined that the teaching outcomes are mostly dealt with desktop applications. It has been seen that only Photostory, Movie Maker and Windows Photos are used among the programs. Given the findings in the programs expressed, it was observed that making the lesson fun and ensuring active participation were the main subjects. In the study coded A34 a finding is included, by saying "In addition, students stated that they had fun in science lessons taught with digital storytelling." In addition to its positive effects, negative effects such as time-consuming and exhausting were determined in the studies in which the Photostory program was used. Since studies are often carried out with primary school students, long and exhausting practices can adversely affect the level of development and physical health of students. It has been revealed that the teaching outcomes reached through web software are obtained from studies using Powtoon, Tondoo, Goanimate, Storybird and

Animaker tools. When the studies using these software are examined it was observed that five results were discussed about making the lesson fun, two results about giving a different perspective to teaching, and one result for active participation and making the lesson productive. In general, it is striking that among the outputs of the teaching category, making the lesson fun and ensuring active participation are coded the most. In studies where it is not clearly stated which digital storytelling tool is used (A2, A3), the issues of using time efficiently, enriching the lesson, facilitating planning, providing classroom management, not appealing to all levels, and being boring are discussed together with other outputs. For these dimensions, it is seen that only the findings of not complying with the level of all students and causing the student to get bored are negative.

The cognitive results of the digital storytelling studies conducted in the field of Classroom Education in Turkey were examined in depth in line with the tools. The general distribution of the data obtained as a result of the examinations is presented in Table 5.

Table 5.

Results Obtained in terms of Cognitive

Cognitive Outcomes	Learning	Creative Thinking	Permanence	Critical Thinking	Akademikritical Thinking Success	Problem Solving	Imagination	Awareness	Visual Memory	Internal Control	Eliminating Concept Misconceptions	Total
Web	Powtoon	-	A21	-	A21	A15	A21	-	-	-	-	4
	Tondoo	A23	A20	-	A20	-	-	-	-	-	A23	4
	Goanimate	A18	-	-	-	-	-	-	-	-	-	1
	MEB Websites	-	-	-	A35	A35	-	-	-	A35	-	3
	Animaker	A6	-	A6	-	-	-	-	-	-	-	2
	Storyjumper	-	A22	-	-	-	-	-	A22	-	-	2
	Storybird	-	-	-	-	-	-	-	-	-	-	-
Desktop	Photostory	A5, A16, A30, A31, A33, A34	A14, A31	A4, A31	A14	A16	A30	A30, A33	A33	A10	-	17
	Moviemaker	A31	A31	A31	-	A9	-	-	A10	-	-	5
	Metaverse	-	A29	-	-	-	-	A29	-	-	-	2
	Windows Photograph	-	-	A24	-	A24	-	-	-	-	-	2
	Adobe After Effect	A13	-	-	-	-	-	-	-	-	-	1
	Adobe Illustrator	A13	-	-	-	-	-	-	-	-	-	1
Total	12	7	5	4	5	2	3	2	2	1	1	44

According to Table 5, cognitive outputs have been found to be handled mostly through desktop applications. Among the desktop applications, Photostory was used the most. Considering the results of the studies in which digital storytelling applications were carried out through the aforementioned program, it was observed that learning was mentioned the most. In addition to its positive effects, in one of the studies (A34) in which the Photostory program was used, digital storytelling did not have a significant effect on social-emotional learning skills. Similarly, in the study coded A9, using the Movie Maker application, it was stated that digital storytelling does not support academic success. This case was described in the study as, "Digital story-based instruction has been found to have no effect on students' academic achievement in mathematics." In one of the studies (A10), which carried out digital storytelling applications through a program, both Photostory and Moviemaker tools were used together and it was claimed that digital storytelling increased visual memory capacity. Similarly, in A13 (Adobe Illustrator, Adobe After Effect) and A31 (Photostory, Moviemaker) coded documents, two different applications were used together and it was emphasized that the lessons conducted with these tools supported learning. In addition, it was stated that creative thinking skills improved in the study coded A31.

The cognitive output accessed through web software has been found to be mostly from studies using Powtoon and Tondoo tools. In general, it is noticeable that learning and creative thinking are coded the most among the outcomes of the cognitive category. In addition to the outputs shown in Table 5, in studies that did not provide information about which tools were used for digital storytelling (A3, A19, A25, A27), in addition to the outputs shown in Table 5, it has often been focused on reducing cognitive load, eliminating concept misconceptions, inadequate technological-pedagogical content knowledge, inability to provide self-evaluation, inability to process information, misunderstanding, and inability to distinguish between fiction and reality. It can be said that only the findings of cognitive load and misconceptions for these dimensions are positive. In addition, only studies using Storybird software did not have cognitive findings.

The psychomotor results of the digital storytelling studies conducted in the field of Classroom Education in Turkey were examined in depth in terms of the tools. The general distribution of the data obtained as a result of the examinations is presented in Table 6.

Table 6.

Results Obtained in terms of Psychomotor

Psychomotor Outcomes		Writing Skills	Language and Speech Development	Reading Skills	Painting-Drawing Skills	Total
Web	Powtoon	-	-	-	-	-
	Tondoo	-	-	-	-	-
	Goanimate	A12, A18	-	-	-	2
	MEB Websites	-	-	A11	-	1
	Animaker	-	-	-	-	-
	Storyjumper	A17	A17	-	-	2
	Storybird	-	-	-	-	-
Desktop	Photostory	A10, A14, A30, A33, A34, A36	A14, A30, A33	-	A4, A30	11
	Moviemaker	A10, A17	A17	A32	-	4
	Metaverse	A29	-	-	-	1
	Windows Photograph	-	-	-	-	-
	Adobe After Effect	A13	-	-	-	1
	Adobe Illustrator	A13	-	-	-	1
	Total	14	5	2	2	23

According to Table 6, it was determined that psychomotor outputs were mostly revealed through desktop applications. In studies using web software, it was determined that five psychomotor findings were reached. Considering desktop applications, Photostory has been used more than other programs. Considering the results of the studies in which digital storytelling applications were carried out through this program, it was determined that writing skills and language and speech development were mentioned most frequently. In a document (A10), which uses a program for digital storytelling applications, both Photostory and Moviemaker tools were used together and it was stated that digital storytelling improves writing skills. Likewise, the A13 (Adobe Illustrator, Adobe After Effect) coded study used two applications together and it was claimed that the digital storytelling activities applied with these tools contributed to the writing skill.

Psychomotor outputs accessed through web software were found only in studies using Goanimate and Storyjumper software and MoNE (Ministry of Education) training sites. In the studies where Storyjumper and Goanimate were used in the digital story creation process, writing skills improved; in the study, that carries out educational activities with MoNE education sites, it has been claimed that digital stories do not benefit reading

skills. However, in one study (A17), both web software (Storyjumper) and desktop application (Moviemaker) were used together. According to the results obtained from the study, it can be said that digital storytelling applications improve writing skills. In the same study, it was stated that collaborative digital storytelling supports language development, while individual digital storytelling does not contribute to language development. In the study coded A17 for this situation, it did not support the fourth hypothesis, which states that "The language development level of gifted students who receive writing instruction with the individual digital storytelling application is higher than the students who receive writing instruction with traditional application, it was seen that the language development level of gifted students who were taught writing with the collaborative digital storytelling application was higher than the students who were taught writing with the traditional method, which supported the fifth hypothesis. In this direction, it can be thought that collaborative work can eliminate the negative effects of digital storytelling. In general, it is noticeable that the writing skill is coded the most among the outcomes of the psychomotor category. In studies where digital storytelling is carried out but the tool used in the process is not specified, positive results were obtained about listening (A26), writing (A2) and reading skills (A2) and visual skills (A26).

The affective results of digital storytelling studies carried out in the field of Classroom Education in Turkey were examined in depth in terms of the tools. The general distribution of the data obtained as a result of the examinations is presented in Table 7.

Table 7.

Results Obtained in terms of Affective

Affective Outcomes		Motivation	Attract Attention and Interest	Attitude	Bringing Excitement	Improving Self-Confidence	Making Effort	Total
Web	Powtoon	-	A15	A15	-	-	-	2
	Tondoo	A23	A20, A23	A20	-	-	-	4
	Goanimate	A12, A18	A18	A18	-	A18	-	5
	MEB Websites	-	-	-	-	-	-	-
	Animaker	A6	A6	-	-	-	-	2
	Storyjumper	-	-	-	-	-	-	-
	Storybird	-	-	-	A1	-	-	1
Desktop	Photostory	A5, A16, A30, A33, A36	A16, A31, A36	A16, A30, A33	-	-	A33	12
	Moviemaker	A9	A31	A9, A32	-	-	-	4
	Metaverse	-	A29	-	-	-	-	1
	Windows	-	-	-	-	-	-	-
	Photograph	-	-	-	-	-	-	-
	Adobe After Effect	-	-	-	-	-	-	-
	Adobe Illustrator	-	-	-	-	-	-	-
Total	10	10	8	1	1	1	31	

Considering Table 7, it has been determined that affective outputs are mostly handled through desktop applications. It has been seen that only Photostory, Moviemaker and Metaverse are used among the applications. Considering the findings in these programs, it was observed that motivation and attracting attention were the main subjects. In the document coded A27, "At the same time, students were pleased with the applications and stated that they increased their motivations." statement is included. In a study (A32) using the Moviemaker program, in addition to its positive effects, it was found that digital storytelling did not have any effect on attitude. It has been revealed that the affective outputs reached through web software are obtained from studies using Goanimate, Tondoo, Powtoon, Animaker and Storybird tools. When the studies using the mentioned software are examined, it has been observed that five results related to attracting attention and interest, four about increasing motivation, three about developing positive attitudes, and one about increasing excitement and self-confidence were discussed. In general, it is observed that motivation, attention and interest are coded the most among the outcomes of the affective category. In studies where no digital storytelling tool was specified (A3, A19, A25, A26), in addition to the outputs shown in Table 7, the issues of adding value, reducing anxiety, creating stress and causing attention difficulties were mentioned. Only stress and attention-difficulty findings for these dimensions are found to be negative.

Conclusion, Discussion and Recommendations

The aim of this study is to analyze the results of studies on digital storytelling in the field of classroom education in Turkey using the systematic review method and to determine what kind of distribution exists. With this purpose, the results of digital storytelling studies from a social, affective, cognitive, technological and psychomotor perspective have been examined in depth in terms of scientific process and teaching. When the studies using desktop applications are examined, it is observed that the outputs of all categories are mostly obtained from Photostory. Similarly, according to the studies of Turgut and Kışla (2015) and Ulu (2021), it was stated that the Photostory program is generally used in digital storytelling research. The reason for this is that Photostory is free, easy to use, and suitable for students of all levels. In addition, this may be due to the fact that the software is known more than others and allows voice recording using a microphone (Pape et al., 2012; Robin & Mcneil, 2013; Wikan et al., 2010; Yılmaz et al., 2017). When we look at the results of the studies in which web-supported tools were used, it was determined that the cognitive outputs were mostly obtained from the studies in which Powtoon and Tondoo tools were included in the application process. Similarly, the data revealed in terms of social and teaching were obtained from studies dealing with Powtoon as a digital storytelling tool. The fact that Powtoon has features that can be used by people of all ages and groups starting from primary school age and that it allows the preparation of very impressive animation videos by taking little time may cause this result (Uysal, 2020). However, the presence of tutorials, webinars and articles explaining how to use the application on the site can be expressed as the reason why Powtoon is

preferred more than others (Forbes, 2014). Goanimate software was generally used in studies involving technological and affective findings. It was determined that the results evaluated under the psychomotor title were generally obtained from studies in which Goanimate and Storyjumper were used. This result may be due to the fact that Storyjumper, an alternative to Powtoon, supports creating a free story (Yılmaz et al., 2017).

Based on the social outputs, it can be said that web-based digital storytelling tools support collaboration. However, in one study (Karademir, 2020), different results were encountered for cooperation. As a part of the quantitative findings of the related study, it was determined that the scores of the students for cooperation skills did not change. In the study, the fact that primary school second grade students could not choose the desired characters depending on the version of the Powtoon tool during digital storytelling applications can be considered as the reason for this. In addition, it can be said that teachers' practices to increase cooperation in primary school affect interpersonal skills and therefore cooperation does not make a quantitative difference between the two groups. Qualitative findings obtained from the same study show that students cooperate effectively during storytelling practices. The finding in Başdaş and Vural's (2017) study that drama-based digital storytelling affects the development of children's social skills is generally consistent with the results of this research. Similarly, according to the findings obtained from this research, it can be said that desktop applications contribute to the cooperation of students. Therefore, it can be mentioned that both desktop and web-based applications have a positive effect on collaboration. In the systematic analysis study conducted by Demirbaş and Şahin (2020), the fact that students work in collaboration as a result of digital storytelling is similar to these results. This may be due to the fact that students have prior knowledge about multimedia tools, as required by the age of technology. Sadik's (2008) statement that students with sufficient technical skills about multimedia tools establish more cooperation supports this idea. However, as a result of the investigation of Ulu (2021), it has been determined that there are problems with cooperation in the digital storytelling process.

When examining the technological outputs, it has been observed that computer and internet use are mostly supported through desktop applications. Based on the outputs obtained, no negative effects of digital storytelling were found in terms of technology. Similar to these findings, Davis (2004) demonstrated in a study that students achieved a variety of technological competencies through digital storytelling. Robin (2008) also stated that if it is ensured that an individual is actively involved in the digital storytelling process, their technological skills will improve. In addition, as a result of the literature review by Turgut and Kışla (2015), the conclusion that the digital storytelling method increases the students' ability to use technology supports this study. However, in line with Ulu's (2021) studies, it was concluded that digital storytelling does not affect the development of technological competencies or literacy. However, according to the data obtained from the study, it has been revealed that although students have positive perceptions about technology use, they do not experience problems in computer and internet use, except for disconnections on the internet network (Alkan, 2019). Thus, it

can be said that the problems encountered in the digital storytelling process are caused by technological opportunities or inadequacies (Dayan & Girmen, 2018; Demirbaş & Şahin, 2020). Therefore, it can be stated that it is very important to create the infrastructure necessary to use in the digital storytelling method, which has scientifically proven effectiveness and efficiency. In order to achieve this situation, digital storytelling libraries can be created where stories are written, recorded and shared (Turgut & Kışla, 2015).

When the outputs obtained in terms of the scientific process are taken into account, it has been observed that Photostory, which is only one of the desktop applications, helps the research skills. However, in one of these studies (Erdoğan, 2021), it was stated that students had difficulties in collecting information and images for research in the digital storytelling process, and thus the story formation process slowed down. This may be due to the fact that the environment in which digital storytelling applications are carried out is not suitable for research. In another study mentioned before (Mangal, 2020), students stated that the working environment is important in creating digital stories by mentioning the inconvenience of the physical environment and the fact that they could not find a quiet place.

Given the outputs obtained from teaching perspective, web-based digital storytelling tools can be said to make the lesson fun. Similarly, based on the findings of this research, it can be stated that desktop applications provide an enjoyable lesson. Thus, it can be said that desktop and web-based tools have a positive effect in terms of entertainment. However, Ay's (2020) study suggested that digital storytelling can be boring for disinterested students. It can also be stated that desktop programs enable students actively participate in the lesson and facilitate the lesson. In the systematic review study prepared by Demirbaş and Şahin (2020), it was concluded that digital stories support active participation, embody abstract expressions and make the lesson more understandable. In addition to its positive effects, it has been found that digital storytelling can be time-consuming and exhausting. In the study prepared by Kukul and Kara (2019), it is thought that digital storytelling will cause problems especially in terms of time management. Aslan and Kuzu (2021) mentioned that digital storytelling is not suitable for every student or grade level and stated that there are problems. Considering that the studies included in this research are generally carried out with primary school students, it may be necessary to take precautions against the previously mentioned negative situations. Digital storytelling can be done in shorter time intervals (Demirbaş & Şahin, 2020) or planning for digital storytelling can be done very carefully.

Based on the cognitive outputs, it can be stated that web-based digital storytelling tools support learning, creative and critical thinking. However, in the study prepared by Uslu and Uslu (2021), digital storytelling has no significant effect on learning skills. According to the findings obtained from the same research, desktop applications have found to contribute to students' learning and creative thinking. Thus, it can be mentioned that both desktop and web-based story creation tools have a positive effect on learning and creative thinking. The findings of Demirbaş and Şahin (2020), Turgut and Kışla (2015) and Ulu (2021) coincide with the findings of this study. In addition, it was

determined that academic success and permanence increased thanks to desktop applications. However, in Çakıcı's (2018) study, showed that digital story-based instruction had no effect on students' academic achievement. In the same study, it was thought that this situation stemmed from the fact that the control group might have been chosen from students with good levels due to the inability to make an unbiased assignment in the research. However, the fact that the experimental group students could not reach sufficient equipment and maturity in digital storytelling due to the limitation of the research process to 5 weeks may have eliminated the difference in success. In a different study (Göçen-Kabaran et al., 2019), it was determined that the participants had problems due to the short duration of the process, which supports this idea.

When outputs were examined from the psychomotor perspective, it was observed that writing skills improved with desktop and web-based digital storytelling tools. As a result of the literature research of Turgut and Kışla (2015) and Ulu (2021), the fact that the digital storytelling method also improves writing skills supports this idea. It was also concluded that desktop applications generally support language and speech development. However, according to the results of Gider (2019), it has been determined that individual digital storytelling applications do not increase language development levels. Experiencing problems in terms of classroom and time management in the study may be the reason for this situation.

Given the outputs obtained from affective perspective, desktop and web-based story creation software have found to increase the interest, motivation and attitude towards the lesson. Therefore, unlike the methods that students are used to, learning with digital storytelling can be an important factor for the development of interest, attitude and motivation. In Yüksel's (2011) study, the fact that students' interest increases as the classroom environment changes through digital activities supports this idea. However, in the study conducted by Kılıç and Sancar-Tokmak (2017), the fact that digital storytelling applications cause problems related to attention difficulties does not match with the findings of this research. In addition, the students' preparation of creative and original products in the digital storytelling process may have contributed to the positive development of their motivation and attitudes. According to studies in the related literature, digital storytelling has positively affected students' attitudes towards lessons (Figg & McCartney, 2010; Hung et al., 2012; Salpeter, 2005).

Overall, it has been determined that desktop programs are used more than web-based applications in digital storytelling studies, but the tools in both types have some positive aspects and limitations. In addition, it can be said that digital stories realized with both desktop and web applications directly affect the teaching process. Changes in the teaching process can indirectly shape students' skills and social life. Öztürk's (2007) statement that students find the lesson enjoyable during the learning process or that the pleasure they receive is the primary source of motivation supports this idea.

Taking into account the results of the current study, virtual libraries that contain digital stories can be created in schools in Turkey in order to reach web 4.0 technology. Mobile libraries can be prepared in rural areas that cannot access the Internet. It has been

determined that research on digital storytelling generally focuses on students and ignores the teacher dimension. In addition, it is thought that teacher guidance has a critical importance in achieving desired results in digital storytelling applications. For this reason, workshop programs and seminars can be organized that will involve teachers in the digital storytelling process and provide them with sufficient equipment. On the other hand, in teacher training institutions, it can be ensured that pre-service teachers receive necessary training on technology-based applications such as digital storytelling and augmented reality.

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Genişletilmiş Türkçe Özet

Dijital öyküleme, insanların gerçek hayatlarını metin, resim, ses ve video gibi dijital öğeleri kullanarak anlatmalarına yardım eden ve gelişmekte olan bir teknik olarak açıklanabilir (Song vd., 2012). İfade edilen multimedya öğeleri, genellikle bir tema veya konu etrafında şekillenen hikâyeleri anlatmak için bilgisayar yazılımı kullanılarak birleştirilmektedir. Bu süreçte öğrenciler ve öğretmenler; Toondoo, Goanimate, Storyjumper gibi ücretsiz veya düşük ücretli, kullanıcı dostu, etkileşimli Web 2.0 araçlarından (Nelson vd., 2009; Robin & Mcneil, 2013) ve Microsoft Photo Story 3, Microsoft Windows Movie Maker gibi bilgisayar yazılımlarından yararlanabilmektedir. Böylece dijital öyküleme eğitimle bütünleştirilmekte, okullarda ve öğretim programlarında bir öğrenme aracı olarak kullanılabilir. Çünkü öğrencilerin ilgi, beklenti ve ihtiyaçlarında görülen değişimler sonucunda dijital öykülemenin eğitim ortamlarında öğrenciler ve öğretmenler için güçlü bir araç olduğu ileri sürülebilir (Robin, 2006). Olumlu etkilerinden dolayı Türkiye’de, son yıllarda dijital öykülemeyle ilgili araştırmaların arttığı gözlenmektedir.

Öğrenme ortamlarında dijital öykülemeye yönelik yapılan çeşitli araştırmaların sonucunda, dijital hikâye anlatımlarının; sınıftaki öğrenme ortamını ve öğrenme deneyimlerini zenginleştirmeye (Sadik, 2008), akademik başarı, motivasyon ve öğrenme stratejilerini artırmaya (Demirer, 2013) yardımcı olduğu belirlenmiştir. Dijital öyküleme yaratıcı düşünmeyi geliştirmeye (Karakuş vd., 2020; Özen & Duran, 2021) ve böylece öğrencileri entelektüel ve kültürel olarak güçlendirmeye (Benmayor, 2008) katkı sağlamaktadır. Öte yandan dijital hikâye anlatımı, yazma performansını ilerletmekte (Gider, 2019) ve derse yönelik tutum ile girişimcilik ruhunu yükseltmektedir (Mangal & Kurtdede-Fidan, 2022). Bu doğrultuda anaokulu (Preradovic vd., 2016), ilkokul (Niemi & Niu, 2021), ortaokul (Özen & Duran, 2021), lise (Ayvaz-Tunç, 2017) ve üniversite (Aslan & Kazu, 2021) olmak üzere eğitimin her kademesinde gerçekleştirilen dijital öyküleme araştırmalarının sonuçlarının genellikle benzerlik gösterdiği tespit edilmiştir. Bu durum, yöntemin her yaşa uygun ve çok yönlü olduğunu göstermektedir. Ancak ulusal alanyazın incelendiğinde, sınıf eğitimi alanında yapılan dijital öyküleme araştırmalarına yönelik herhangi bir sistematik inceleme çalışmasına rastlanmamıştır. Ayrıca alanyazında, dijital öykülemenin sonuçlarını araç ekseninde inceleyen bir çalışma bulunmamıştır. Bu çerçevede dijital hikâye geliştirmeyi kolaylaştıran yazılımların ve yazılımlarla ilgili önemli noktaların yeteri kadar açık sunulmadığı görülmüştür. Dolayısıyla çalışmanın dijital öyküleme araçlarına ve bu araçların kullanımıyla elde edilen sonuçlara ilişkin rehberlik sağlayacağı düşünülmektedir. Çalışmada dijital öyküleme araçları, derinlemesine analiz edildiği için elde edilen bulguların dijital öyküleme üzerine araştırma yapacaklara ışık tutması beklenmektedir. Belirtilen gerekçeler doğrultusunda çalışmanın amacı, Türkiye’de sınıf eğitimi alanında dijital öyküleme ile ilgili yapılmış çalışmaların bulgularını sistematik inceleme yöntemiyle analiz ederek nasıl bir dağılım olduğunu saptamaktır.

Akademik yayın türleri olarak makale ve lisansüstü tezler araştırma kapsamına alınmıştır. Çalışmada tarama için “dijital öykü, dijital hikâye, dijital öyküleme, digital story ve digital

storytelling” anahtar kelimeleri kullanılmıştır. Belirlenen anahtar kelimeler doğrultusunda ERIC, Web of Science, Ulakbim, Google Scholar ve Yüksek Öğretim Kurulu Ulusal Tez Merkezi veri tabanlarından alanyazın taraması yapılmıştır. Tarama neticesinde, seçilen konu başlığına uygun olarak 24 makale ve 24 tez olmak üzere toplamda 48 bilimsel çalışma tespit edilmiştir. Akabinde ulaşılan yayınların, özet bölümleri araştırmacılar tarafından dikkatli bir şekilde okunmuştur. Yayınlanan makale ve tezlerin özetleri karar vermek için yeterli görülmediği durumda metnin tamamı incelenmiştir. Böylece seçim ölçütlerine uygun görülmeyen araştırmalar analiz dışı bırakılmıştır. Bu kapsamda 2021 yılının sonuna kadar yapılmış 36 bilimsel yayın MaxQda 2022 programında ayrıntılı olarak okunmuştur. Daha sonra çalışma kapsamına alınan bütün dokümanlar düşünülen temel kategoriler açısından incelenerek kodlanmıştır. Böylece tez ve makalelerin her biri içerik analizine tabi tutularak araştırmalardan ulaşılan sonuçlar, dijital öyküleme araçları açısından incelenmiştir. Elde edilen verilerin yorumlanmasında tablolardan yararlanılmış ve tablolarda sayısal olarak sadece frekanslara yer verilmiştir.

İncelemeler sonucunda, masaüstü uygulamalarını kullanan çalışmalarda tüm kategorilere ait çıktılardan daha çok Photostory’den elde edildiği gözlemlenmiştir. Benzer şekilde Turgut ve Kışla (2015) ile Ulu’nun (2021) incelemelerine göre, dijital öyküleme araştırmalarında genellikle Photostory programının kullanıldığı belirtilmiştir. Photostory’nin ücretsiz, kullanılabilirliğinin kolay ve her seviyedeki öğrenciye uygun olması bunun nedeni olarak düşünülebilir. Ayrıca bu durum, yazılımın diğerlerine göre daha fazla bilinmesi ve mikrofon kullanarak ses kaydı yapmaya imkân tanınmasından kaynaklanabilir (Pape vd., 2012; Robin ve Mcneil, 2013; Wikan vd., 2010; Yılmaz vd., 2017). Web destekli araçların kullanıldığı çalışmaların sonuçlarına bakıldığında, bilişsel çıktılara çoğunlukla, uygulama sürecinde Powtoon ve Toondoo araçlarının yer verildiği çalışmalardan ulaşıldığı belirlenmiştir. Benzer şekilde sosyal açıdan ve öğretim açısından ortaya çıkarılan verilere, dijital öyküleme aracı olarak Powtoon’u ele alan çalışmalardan ulaşılmıştır. Powtoon’un ilkökul çağından itibaren her yaşta ve gruptan kişinin kullanabileceği özelliklere sahip olması ve kısa zamanda çok etkileyici animasyon videolarının hazırlanmasını sağlaması bu sonucun ortaya çıkmasının sebebi olabilir (Uysal, 2020). Bununla birlikte sitede uygulamanın nasıl kullanılacağını açıklayan öğreticilerin, web seminerlerinin ve makalelerin bulunması Powtoon’un diğerlerine nazaran daha fazla tercih edilmesinin sebebi olarak ifade edilebilir (Forbes, 2014). Diğer taraftan teknolojik ve duyuşsal bulguların yer aldığı çalışmalarda genellikle Goanimate yazılımı kullanılmıştır. Psikomotor başlığı altında değerlendirilen sonuçların ise genel olarak, Goanimate ve Storyjumper’in kullanıldığı çalışmalardan elde edildiği tespit edilmiştir. Bu sonuç, Powtoon alternatifi olan Storyjumper’in ücretsiz olarak hikâye oluşturmayı desteklemesinden kaynaklanabilir (Yılmaz vd., 2017).

Genel olarak ele alındığında, dijital öyküleme çalışmalarında masaüstü programlarının web tabanlı uygulamalara nazaran daha fazla kullanıldığı, ancak her iki türe ait araçların bazı olumlu yönlerinin ve sınırlılıklarının olduğu belirlenmiştir. Ayrıca hem masaüstü hem de web uygulamalarıyla gerçekleştirilen dijital hikâyelerin öğretim sürecini doğrudan etkilediği söylenebilir. Öğretim sürecinde yaşanan değişimler ise

dolaylı olarak öğrencilerin becerilerini ve sosyal hayatını şekillendirebilir. Öztürk'ün (2007) öğrenme süreci boyunca öğrencilerin dersi eğlenceli bulmaları veya aldıkları hazzın, motivasyonun birincil kaynağını oluşturduğunu belirtmesi bu fikri desteklemektedir. Bu sonuçlardan hareketle, internete erişim sağlayamayan kırsal bölgelerde mobil kütüphaneler hazırlanabilir. Öğretmenleri dijital öyküleme sürecine dâhil edecek ve onların yeterli donanım kazanmalarını sağlayacak atölye programları ve seminerler düzenlenebilir. Ayrıca öğretmen yetiştiren kurumlarda öğretmen adaylarının dijital öyküleme ve artırılmış gerçeklik gibi teknoloji tabanlı uygulamalar hakkında gerekli eğitimi almaları sağlanabilir.

Ethics Committee Approval: All the rules in the Scientific Research and Publication Ethics Directive were complied with, and none of the "Actions Contrary to Scientific Research and Publication Ethics" in the second part of the Directive were applied.

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