

# Developing Digital Literacy Skill for Initial Teacher Education through Digital Storytelling

*by Erma Nuroh*

---

**Submission date:** 09-Mar-2023 01:15PM (UTC+0700)

**Submission ID:** 2032793994

**File name:** igital\_Literacy\_Skill\_for\_Initial\_teacher\_in\_DST\_ICIGR\_2021.pdf (933.67K)

**Word count:** 7672

**Character count:** 45345

## Research article

# Developing Digital Literacy Skill for Initial Teacher Education through Digital Storytelling

Ermawati Zulikhatin Nuroh<sup>1</sup>, Mahardika Darmawan Kusumawardana<sup>2\*</sup>, and Evie Destiana<sup>3</sup>

Faculty of Education and Psychological Science, Universitas Muhammadiyah Sidoarjo, Indonesia

**ORCID**

Mahardika Darmawan Kusumawardana: <https://orcid.org/0000-0002-9035-0092>

**Abstract.**

Studies have proven that the use of digital storytelling in classrooms positively impacts the teaching and learning processes. Considering the varied educational needs, digital stories can be used for a variety of purposes. Therefore, using digital storytelling in practicum activities, the current study aimed to analyze teachers' perception on and experience with the process, including concept selection, preparation, and execution of the digital story. The research was carried out using multiple holistic case designs. The study group consisted of six Initial Teacher Education (ITE) courses with varying levels of technology disposition. Data were collected through observation, semi-structured interviews, and document analysis, followed by collective analysis of the data was done. The findings were organized around two key themes: digital storytelling as a teaching tool and digital stories as a technology for teachers. The findings were examined in terms of the benefits of employing digital stories in instructional activities, as well as the dimensions that need to be improved, digital story constraints, and digital literacy. The current research has uncovered some information regarding the benefits of employing digital storytelling in practicum activities – which aspects of them should be developed and which ones should be avoided? This study recommends using digital storytelling in classroom teaching and learning processes.

**Keywords:** digital storytelling, practicum activities, Initial Teacher Education (ITE) course

## 1. Introduction

In digitally-rich language learning environments, equipping student teachers with digital literacy is important in the initial teacher education (ITE) course. An initial teacher education (ITE) program designed to help prospective teacher students socialize in the real world of teaching. This initial teacher education (ITE) program is comparable to field student teaching, mentoring programs, and clinical teaching[1]. Practical experiences are directed at teaching and learning activities in university-based teacher education programs to prepare prospective teachers to meet the increasing and diverse demands of educational needs. Student teachers become acquainted with complex teaching

Corresponding Author:  
 Mahardika Darmawan  
 Kusumawardana; email:  
 mahardikadar-  
 mawan@umsida.ac.id

Published 20 June 2022

<sup>2</sup> Publishing services provided by Knowledge E

© Ermawati Zulikhatin Nuroh et al. This article is distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use and redistribution provided that the original author and source are credited.

Selection and Peer-review under the responsibility of the ICIGR 2021 Conference Committee.

 OPEN ACCESS

activities before beginning to teach [2]. Student teachers must engage in authentic or real-life teaching in school settings, as well as a reflection on their teaching, at the pedagogical curriculum level [1].

One of the ways to build and enhance pre-service language teachers' digital literacy is by introducing them to digital storytelling. With the rapid development of technology, storytelling, which existed before printed sources, has been replaced by digital storytelling. Teachers' and students' information-gathering skills, problem-solving abilities, and attitudes toward collaboration have all been influenced by digital storytelling. Educators use digital storytelling as a motivational tool to attract students' attention and guide them. As a result of these factors, the importance of developing digital storytelling with pre-service teachers in English language education has been elevated to the top of the priority list. According to the related literature, digital story creation studies were conducted with students of various ages, pre-service teachers, or teachers [3]–[5]. It has been demonstrated that creating a digital story improves both pedagogical content knowledge and learning, as well as the teaching experience of the stakeholders in those studies.

Previous research on in-service teachers and digital storytelling is well documented. [6] researched with teachers, and his research by preparing digital stories was carried out to increase the efficiency of teachers in teaching and learning processes and to catalyze the process of technology integration. Another study, conducted by Hung, Hwang, and Huang [7], confirmed that using project-based digital storytelling to improve learning performance in science classes improved learning performance in the five students studied. According to the findings of their study, using project-based digital stories can enhance students' motivation, academic success, and problem-solving skills more than traditional project-based learning. Similarly, Yang and Wu [8] found that using digital storytelling in tenth graders' foreign language education can improve their academic success, learning motivation, and critical thinking skills. Furthermore, this study indicates that by using this method, both teachers and students are better able to develop critical thinking skills and learn new things. According to the findings of this study, most teachers have a positive view toward the process of creating digital stories and prefer to use creative drama in the design of the scenario, such as the final presentation, attracting students' attention, and encouraging students to think about designing the story.

In practice, the ITE course must not only be able to use technology efficiently but also serve as a technical accuracy role model for students. Unfortunately, most teachers see technology as a means of accessing social media, playing games, and accessing social

media, as well as entertainment [9]. Teachers are currently expected to be able to use technology optimally in their professional development and for educational purposes, so there is a need for knowledge and skills to use technology to the fullest while participating in pre-service teacher, teacher candidate, and in-service teacher programs. As a result, prospective teachers are expected to be able to use technology effectively to solve problems in their professional lives. As a result, through undergraduate programs and field experience initiatives, technology must be integrated into pre-service teacher education programs [9]. In pre-service teacher education programs, Oigara and Wallace [10] emphasized the importance of instructors lecturing prospective teachers on how to effectively integrate technology into the learning process. Furthermore, Giles and Kent [9] underlined the significance of incorporating technology into pre-service teachers' education programs such as through undergraduate programs and field experience initiatives.

Digital storytelling is also used in teacher education. Many pre-service teachers are enthusiastic about digital storytelling and want to use it in their future classes [11]. The experience of digital storytelling increased their openness to educational technology [12]. When it came to introducing pre-service teachers to educational technology, activating and transferring prior knowledge and skills about technology was just as important as teaching them how to use specific technological tools in class. Student teachers can use digital storytelling to transfer their technical knowledge and skills to educational contexts. However, instructors and student teachers are not required to be fully proficient in the use of technology [11], [13].

In response to an urgent need for equipping Initial Teacher Education (ITE) with technological literacy, the incorporation of technology in student teachers in teaching activities is thought to have a positive effect on the well-known process in which some problems have been encountered. However, there is a lack of information about the use of digital stories, which is one of the technologies that can be integrated into student teachers' teaching activities. In this regard, it is thought important to investigate the technology integration process by incorporating digital stories into Initial Teacher Education (ITE) course. In this regard, the current study aims to investigate student teachers' perspectives and experiences with the process, which includes selecting concepts related to the target English language subject, preparing, and implementing the digital story, with a primary focus on the use of digital stories in student teachers' teaching activities. The following are the study's research questions in this context:

(1) In what ways do the use of digital stories in Initial Teacher Education (ITE) contribute to the learning process?

### **Digital Storytelling (DST) as Multimodal Literacy**

Digital Storytelling (DST) is defined by Barrett (2005) as a digital video application and software as a collection of multi-model digital tools that can be used to improve the reflective practice of the Initial Teacher Education (ITE) course. DST is also commonly used in Initial Teacher Education (ITE) courses, according to Kajder and Parkes [14], because it has the potential to move them beyond print-centric written reflection. This also applies to smartphones and ultra-portable devices (such as the iPad) that require post-production digital video editing software that is widely available and user-friendly.

Although there are numerous types (genres) of Digital Storytelling, this study adheres to the DST model, which was created by the Center for Digital Storytelling [15]. According to Matthews-DeNatale [16], the DST model was created by someone who is not a media professional; this short video is 3 to 5 minutes long and is based on personal thoughts and experiences. Digital storytelling is created by combining multimedia components such as video, music, photos, and narration, which is the author's voice [3]. The most important aspect of developing digital stories is narrative design and creation [15], [16]. Furthermore, no less important is the use of multimedia to enhance narrative construction and story communication.

Wu and Chen [5] conducted a study on the use of DST education across scientific disciplines, finding that DST was used more frequently in language and literacy subjects than in humanities and other social science subjects. This statement is also supported by [17]–[19], who stated that many studies on second or foreign language courses for students who do not speak the native language, research on literacy courses for native language students [20], [21], Similarly, [22], [23] researched language courses aimed at multiliteracies for learners from various linguistic backgrounds. DST is regarded as an integrated and complex practice that is well suited to language and literacy classes because Digital Storytelling (DST) involves students expressing meaning through spoken, written, or visually presented personal narratives that also involve the use of language. As a result, students must master technology to realize their language expression in digital form.

According to Krumsvik [24], developing the ability to use technology, problem-solving skills, exchanging information, and the ability to assess safely and reflexively are all important. Digital competence is related to digital, audiovisual, or multimedia media formats, as well as language techniques and management. Encouragement boosts innovation, reflexive thinking, and creativity by providing impetus from various communication and language registers [25].

## 1.1. Multimodal Literacy in Initial Teacher Education (ITE)

Multimodal literacies are critical for developing learners' abilities to interact with, though, as well as around texts in which language is not the primary form of representation [26]; rather, texts are formed by a "multimodal ensemble," that is, "a designed complex of different modes" [26], [27].

Kress [27] explains social semiotics theory, which uses semiotic modes as a source of meaning in social and cultural practices. The key question in social semiotics is to interrogate the meaning provided by each mode of communication. Kress [27] defines agents as "unification of markers" derived from certain shapes or colors of observed facial expressions, such as danger signs or rejection.

A critical reader can comprehend a text's concept from a social semiotic standpoint, according to Lankshear [28], by deconstructing the deep meaning of each text, object, event, technique, process, image, situation, or statement. A text's structure reveals various social and cultural conditions that can influence signs as they discover themselves and their relationship with their audience. A good text includes markers that reflect the signer's interests and intentions [27]. Tan and Zammit [29] also experimented with different semiotic modes to represent ideas in texts, with the teacher providing multimodal literacy development, critical metalanguage, and deconstructing the text's relationships between semiotic modes.

Associating literacy theory with multimodality is critical in the new media era [30]. A multimodal text contains two or more semiotic modes. Semiotic modes such as audio, visual, linguistic, gestural, and spatial have their system for making meaning [29]. This multimodal text employs a variety of communication mediums, including websites, radio, films, and print media [31]. Print media, such as children's books with pictures, words, and sound buttons, is a type of multimodal text rather than multimedia. Multimedia, on the other hand, is always multimodal. This is due to the inherent characteristics of digital technology, which enable the convergence of different authoring modes in software as well as the ability to display multimedia texts on various platforms and audiences [32].

Initial Teacher Education students must be able to master pedagogical knowledge (PK), technological knowledge (TK), and classroom technology knowledge (CK) during practicum [33]. They argue that by demonstrating the interaction of this knowledge, Initial Teacher Education (ITE) students will be able to effectively use technology to improve their teaching practice. According to Fisser, Pareja, Tondelur, Voogt, and Van Braak [34], TPACK in Initial Teacher Education (ITE) is an important factor that integrates ICT and learning transformation. According to empirical studies in language education,

TPACK is critical for the successful implementation of computer-assisted language learning and mobile-assisted language learning [35].

A few studies on the development of the TPACK assessment instrument for English teachers focus on teaching English as a second language in addition to the traditional skills of reading, listening, speaking, and writing. However, they have not seen TPACK in the context of developing language knowledge and other meaning-making systems in the Initial Teacher Education (ITE) course. They have not recognized that literacy must go beyond print literacy/text literacy [36], [37].

## 2. Method

### 2.1. Research design

The purpose of this study is to examine Initial Teachers' experiences with digital stories in language learning activities through a case study design, a qualitative approach. A case study is a type of research design that enables the examination of the causes and effects of the investigated context [38]. The current study was designed using several holistic case designs, with each initial teacher's experiences and opinions serving as a case [39].

### 2.2. Study group

A purposive sampling technique was used to create study groups [40]. The current study's objective is to work with heterogeneous groups in terms of technology disposition to obtain rich data at the individual case level. In this regard, an open-ended questionnaire was distributed to 6 students enrolled in a private university in East Java. This questionnaire contains open-ended questions designed to elicit participants' experiences with technology and their opinions on its integration into activities. According to the data collected via this questionnaire, participants were classified as having a high, medium, or low level of technology disposition, with two participants assigned to each category; a total of six participants were assigned to the study group. Table 1 contains information about the six participants who were chosen based on their responses to the open-ended questionnaire.

TABLE 1: Information about the participants.

Participants	Take a course on the use of technology	know the computer program/application for primary teacher education	opinions about the use of technology	technology disposition
Initial Teacher 1&2	not taken	Program/application does not know	she doesn't plan to use it in her teaching life	Low (L)
Initial Teacher 3&4	1course	Program/application does not know	thinking to use the content for visualization	Medium (M)
Initial Teacher 5&6	1course	know more than one	thinking to use the content for teaching life	High (H)

### 2.3. Context

Initial teachers who participate in teaching practice during their final year's sixth semester. Initial teachers work for six weeks, every day, in junior high schools as part of this course. They are required to develop a lesson plan by the 2013 National Curriculum (Minister of Education and Culture Curriculum 2013, MONEC) and to implement their plans in public junior high schools. They are required to produce an evaluation report on the implementation process. The majority of the National Curriculum is based on rote memorization and drilling, as evidenced by Hawanti, Hardman and A-Rahman, and Widodo [41]–[43].

### 2.4. Process

The research was conducted on April-May during the academic year 2020-2021. The study period is divided into the following stages: conducting prior interviews with participants, training participants on how to create digital stories, implementing participant plans, observing participants, and conducting final interviews. The research process will be divided into two sections: training and data collection.

### 2.5. Training

To begin, the researchers will conduct training with participants on how to create digital stories. The training was completed throughout five stages. The goal of using technology-assisted learning, its benefits and limitations, the introduction of digital stories, scaffolded creation of digital stories, digital story creation, digital story presentation,



and reflection [43]. The purpose of this project is to increase initial teachers' awareness of the implementation process for them to evaluate language learning activities that incorporate digital storytelling or do not. Participants are free to choose a thematic lesson, determine the stage of the process, and determine how technology will be integrated into the process. A systemic functional linguistics-inspired genre approach informed the cycle of training activities, which included:

1. Building knowledge of a digital story
2. Joint story deconstruction
3. Joint story construction
4. Independent story construction
5. Story circles

The participating initial teachers and the researcher went through the following stages as a group:

TABLE 2: Stages of a digital storytelling project [43].

Research Questions	Data Collection	Findings (Themes-Categories and Codes)
In what ways do the use of digital stories in pre-service English language teachers contribute to the learning process?	observations	The digital story as a material for education
In what ways do the use of digital stories in pre-service English language teachers contribute to the teaching process?	document analysis	contribution to the learning process
	interviews	Arousing the students' interest
	observations	suitable for personalization
	document analysis	concretization of the content
	interviews	flexibility of use
		The digital story as a material for education
		contribution to the teaching process
		easiness in the activity management
		Making it easier to observe
		integrating with different methods and techniques

## 2.6. Data collection

Participants' observations, informal interviews, and students' works—photographs and story drafts—were used to collect empirical data. All data were analyzed interpretively and narratively. The data were classified into moment-to-moment interactions (between researchers and initial teachers and between students), characterizations of such interactions (how much both the researchers and the Initial Teacher Education (ITE) course valued such interactions, characterizations of such interactions (how much both the teachers and the students valued such interactions), and interactional patterns (how students interacted with their peers). These three levels of analysis enabled the capture of several emerging findings pertinent to the three research questions. The purpose of thematic analysis was to discover, analyze, and report on patterns (themes) within data [44]. This analysis included becoming acquainted with the data, developing initial codes, searching for themes within codes, reviewing themes, defining and naming themes, and producing the final report see [44] for a fuller discussion of each step). Thus, data were classified and coded according to recurrent themes that represented data sets pertinent to specific research questions. The categorized data were made sense of using classroom discourse analysis.

Researchers observed prospective initial teachers engaging in language learning activities. The observation process employs a non-participatory observation strategy, in which the researcher observes and records while not participating in group activities [38], [45]. To ensure the systematic nature of the observations made in this study, a semi-structured interview form with four dimensions and 15 items was developed. The dimensions discovered through observation are the classroom's technical conditions, the participation of initial teachers, students, and the use of technology. This dimension has been observed to be particularly focused on the context of using digital stories in the students of the Primary Teachers Education program. Sample items from the observation protocol are presented in table 3. Additionally, the researcher video-recorded the plan's execution to enable repeated analyses of the observational data.

In qualitative research, the documents to be analyzed may be those created by the researchers following the start of the research or those that have existed previously [46]. Documents analyzed in this study included language learning activity plans created by pre-service teachers, digital stories created by initial teachers, and notes taken by the researcher during observations. In the context of document analysis, the evaluation of the activity plan takes precedence. In this regard, participants were asked to write

TABLE 3: Sample items from the observation protocol.

Technical condition in the classroom	Participating pre-service teacher	Students	Using technology
Is there a computer in the classroom?	In which period did the technology be included in the activity?	How do the students react to the digital story?	What is the quality of the digital story it prepares?
Is there an LCD in the classroom?	Which teaching methods	Is there a section that is more attractive to the	Was a technical problem
Is there a sound system in the classroom?	Did she/he benefit from it?	the students during	encountered during the use of technology?

extensively about their awareness of and assessment of the process in a detailed manner.

Interviews were conducted before and the following implementation to elicit participants' perspectives on the use of digital stories in language learning activities. Before the implementation of activities, semi-structured interviews were conducted. The interview was designed to elicit participants' perspectives on how technology can be integrated into the educational process, the potential benefits of integration, and the potential difficulties associated with integration. Interviews conducted following the plan's implementation have two distinct objectives. To begin, the planning process, its implementation, students, and the activity process in which digital storytelling is used and not used in language learning are discussed. Second, a segment of the video is viewed and evaluated in collaboration with the initial teachers. This way, it aims to thoroughly analyze the process and ascertain the reasons for the participants' behavior. Each participant was interviewed for on average 59 minutes.

### 2.7. Data analysis

The content analysis method was used to conduct the data analysis. To approach the data holistically during the analysis process, all data were analyzed together. In this regard, each participant's observation, document analysis, and pre-and post-interview data were analyzed separately. Then, by combining the obtained codes, categories and finally, themes were created

## 2.8. Trustworthiness

Collecting data from a variety of sources is critical for ensuring a study's validity [45]. Triangulation strategies and feedback collection were used to ensure the validity of internal data in this study. External validity necessitates the dissemination of research findings across a variety of contexts, resulting in more general implications [47]. Thus, through the use of observation, semi-structured interviews, and documents, a variety of data collection methods can be ensured. To assess the consistency of the collected data within the context of the study's reliability measures, assistance from two distinct experts was sought. The codes and categories were presented to the experts in the form of two distinct blocks. Experts were tasked with the task of matching the codes and classifications. Miles and Huberman's reliability formula was used to analyze expert responses [47]. Due to the nature of the research method, interpretive codes were developed. As a result, unresolved data and codes were reassessed. This study adheres to ethical research practices. Before the findings, Table 4 summarizes the research questions, the data collection methods used to address the research questions, and the research findings. Table 4 summarizes the findings for each research question, along with the theme, categories, and codes.

## 3. Findings

The current study's findings are organized around the themes of the digital story as an educational tool and the digital story as a technology tool for teachers. The findings are illustrated with data from participant statements, observations, and documents, by the explanations made about the content of the categories and codes for the themes.

### 3.1. The digital story as a material for education

The digital story used in science activities by the Initial Teacher Education (ITE) course and addressed as educational material was evaluated under this theme in terms of its contribution to the learning and teaching processes in the current study. To summarize the study's findings, Figure 1 presents themes, categories, and codes.

TABLE 4: Research questions, data collection methods were used to answer these questions and their findings.

Research Questions	Data Collection	Findings (Themes-Categories and Codes)
In what ways do the use of digital stories in pre-service English language teachers contribute to the learning process?	observations	The digital story as a material for education
In what ways do the use of digital stories in pre-service English language teachers contribute to the teaching process?	document analysis	contribution to the learning process
	interviews	Arousing the students' interest
	observations	suitable for personalization
	document analysis	concretization of the content
	interviews	flexibility of use
		The digital story as a material for education
		contribution to the teaching process
		easiness in the activity management
		Making it easier to observe
		integrating with different methods and techniques

### 3.1.1. Contribution to the learning process (Research question 1)

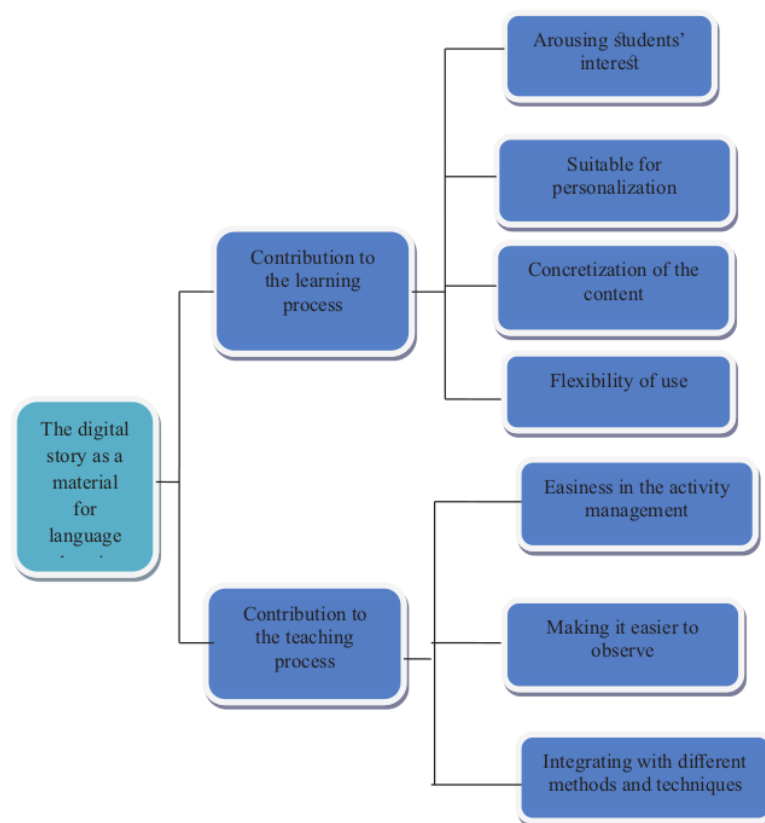
The data indicate that the digital story technology-aided students in their comprehension of the presented content. At this point, the advantages inherent in the material's nature become apparent. The contributions of digital stories to the learning process can be summarized as follows: they arouse the interest of students, allow personalization, allow concretization of the content, provide more opportunities for participation, offer the flexibility of use, make learning permanent and make it possible to present the content comprehensively.

### 3.2. Arousing students' interest

The initial teachers stated that digital storytelling engaged students and was critical for content comprehension. According to the participants, students found digital stories interesting because they differed from frequently used traditional methods and techniques. Another factor that contributed to students' interest in digital stories was the

ability to hear their teacher’s voice. According to initial teachers, when students hear a familiar voice, they are more receptive to carefully listening to it.

*“Students recognize my voice when I tell stories. This arouses their interest, especially because it is accompanied by interesting animated pictures. They were curious about how I made it, and their interest was aroused because it was something new and exciting for them, similar to watching cartoons or videos on YouTube. This is something that students enjoy doing. That’s one of the ways I make it more appealing to them.” (ITE 5)*



**Figure 1:** the categories and codes related to the theme of the digital story as a material for education.

According to initial teachers’ perspectives, the captivating nature of the digital story in the presentation of concepts and contents is closely related to the visual elements used in stories. The researchers’ classroom observations corroborate these initial teachers’ perceptions. An Initial teacher created several digital stories for a variety of subjects, including Science, English, Indonesia, Social, etc, Students listened intently to this story.

Additionally, with each new story, initial teachers improved their ability to incorporate audio and visual effects into their stories. This resulted in considerable arousal of students' interest. The following is the plan evaluation writing of a teacher who has developed an increased awareness of the issue:



Figure 2: The digital stories in several subjects.

*“When compared to the story I prepared for teaching the previous week, the story I prepared for teaching earlier became more interesting for students because it was more colorful with interesting pictures... (ITE.2)*

### 3.3. Suitable for personalization

It is believed that the experiences gained through teaching-learning activities created with digital stories can serve as a reflection of the material's personal ability. The participants stated that digital storytelling is critical because it enables the creation of materials that are appropriate for students' developmental stage, interests, and needs, as well as having the appropriate content, which is critical for concept teaching. It is stated that while there are currently available materials, they are unsuitable for educational purposes for a variety of reasons. The following are the thoughts of an initial teacher who believes that one of these reasons is the inappropriate content of currently available materials:

*“Students can watch shows on television that contain inappropriate content. I've realized the benefits of using technology; it's a fascinating tool, so why don't we put it to good use in the classroom? I can create digital stories that correspond to the subject matter of some teaching materials.” (ITE 1)*

The participants emphasized the importance of conveying accurate information to students during the presentation of the concepts they teach, and how, through the use of digital stories, misconceptions can be avoided and students can be introduced to accurate information.

*"...there is a significant difference between using the materials I prepared and the materials that are currently available." It's possible that what's currently available doesn't have the most up-to-date information. There could be some misunderstandings and misinformation among them." (ITE. 5)*

Another aspect of digital stories' suitability for personalization is that they enable the creation of classroom-specific materials. A participant who took advantage of this feature of digital stories incorporated the class mascot into the story and created unique material. He/she transformed the class's mascot, a puppet, into the protagonist of a story. By posing questions to the students via this puppet, it was discovered that their participation increased.

#### *Concretization of the content*

Another code that participants frequently emphasize is the concretization of several subjects through digital stories. In this context, participants discussed the benefits of using digital stories in subject content areas where observation is either impossible or extremely difficult. The following are the thoughts of a participant who was preparing a story about recount text:

*"Telling a story about a historical event using animation and pictures helps students visualize the event. Students benefit greatly from being introduced to narrative text." (ITE1)*

#### *Flexibility of use*

During the observations, it was discovered that digital stories were primarily used to present content. One of the reasons for the widespread use of digital stories in content presentation is that they enable more effective teaching of concepts within a context. The participants emphasized that by doing so, students would gain a better understanding of the material and would feel more at ease. One initial teacher used the digital story to evaluate the day. The initial teachers and students who created a digital story using photographs taken during class activities discussed their story during the evaluation process. The students' active participation is also critical in this innovative use of a digital story.



## 4. Discussion and results

The current study aimed to investigate the process of integrating technology into narrative text activities conducted in the primary school using digital stories based on the experiences of initial teachers. Based on the findings of the current study, the process was evaluated under two themes: the digital story as teaching material and a technological tool for teachers. While the theme of the digital story as a material for the teacher includes discourses about the learning and teaching process, the theme of the digital story as a means of technology for the teacher includes discourses about the teacher's personal and professional development, adoption of the material, and limitations associated with its use.

The contribution of digital stories evaluated as a material for education was thought to have stemmed from their potential to draw students' attention to a large extent. The discovery that digital stories are appealing to learners is consistent with previous research [48], [49]. Similar to the current study, Chun-Ming, Hwang, and Huang [50] discovered that the use of digital stories in the science course of sixth-graders increased students' interest and motivation. Because of their limitations in information transfer, traditional methods used in several materials can lead to decreased motivation [51], [52]. Though the presence of a well-prepared story cannot replace analytical thinking, it is such an effective way of conveying information that it can be easily absorbed [53]. The teachers are unable to make adequate use of original materials and effective instructional methods in junior high school language learning activities. From this vantage point, it is clear that the use of digital stories in classes where quality materials are not frequently used can improve the learning environment through visual and auditory stimuli, thereby arousing students' interest.

By concretizing the content, high-quality visuals presented through digital stories can make significant contributions to several materials education. A frequently expressed opinion among initial teachers was that digital stories have a great potential to concretize the content, a finding that has also been reported by many other studies in the literature [49], [54]. The primary goal of language learning activities is to expose students to real-life situations. However, digital stories can be used to teach content that cannot be addressed through doing-experiencing activities due to safety and economic concerns. This could have a wide range of positive consequences. While using technology to teach relatively abstract concepts makes the teaching process easier for the teacher, the attractiveness of technology makes it easier for students to understand the content.

When the findings were examined, it was discovered that the Initial Teachers were able to integrate the digital story in some text in the English classroom such as recount text, narrative text, procedure text, descriptive text, and report text in studying language learning. In this regard, digital stories are understood as material that can be applied to various texts. Digital stories or DST can have a considerable influence on the knowledge of learners and language and literacy development [43], [55]. Similarly, Alisinanolu discovered that pre-service teachers lacked confidence in their ability to develop materials. Teachers who are unable to create or provide the required materials are directed to activities that can be completed without the use of materials [56]. As a result, providing materials for pre-service teachers that can be used for a variety of concepts and contents can be an effective way to encourage pre-service teachers who feel incompetent in material development to perform language learning activities using a variety of materials.

## 5. Conclusions and Implications

It was determined that initial teachers gained awareness and competence in the use of technology in the context of the current study. It is well known that the digital story, which bridges the gap between high and low technology environments, aids learners in gaining competence in the use of technology [3], [57], [58]. The process of creating a digital story can be carried out on a basic level without the use of any additional technology, or it can be enhanced by the use of various applications and software programs. In this regard, digital stories can be used to combine basic and advanced technologies in the educational environment. When the implementations of the participants are examined, it is discovered that they initially created digital stories with only accessible images. It was seen in the following implementations that they enriched their stories with the images they created using various software. The process of creating a digital story is thought to provide an opportunity for initial teachers to develop their technology literacy and skills for using information technologies in the context of the current study. By actively participating in the process of creating a digital story, initial teachers can expand their technical knowledge and skills. Therefore, it can be stated that the goal of the present study is to make the teaching process easier for the teacher, and the attractiveness of the technology makes it easier for students to understand the materials. Thus, through the use of digital storytelling that promotes the acquisition of technology literacy skills identified as 21<sup>st</sup>-century skills [59] in education, an important contribution to literacy progress can be made [60].

## References

- [1] Widodo HP, Ferdiansyah F, Sandi S. Routledge international handbook of schools and schooling in Asia. New York: Routledge; 2018.
- [2] Tang SYF, Cheng MMH, Wong AKY. The preparation of pre-service student teachers' competence to work in schools. *Journal of Education for Teaching*. 2016;42:149–162. <https://doi.org/10.1080/02607476.2016.1143143>
- [3] Dogan B, Robin BR. Implementation of digital storytelling in the classroom by teachers trained in a digital storytelling workshop. *Society for Information Technology & Teacher Education International Conference (SITE)*. 2008;2:902–907.
- [4] Özüdoğru G, Çakır H. An investigation into the opinions of pre-service teachers toward uses of digital storytelling in literacy education. *Participatory Educational Research (PER)*. 2020;7(1):242–256.
- [5] Wu J, Chen DTV. A systematic review of educational digital storytelling. *Computers & Education*. 2020;147-153. <https://doi.org/10.1016/j.compedu.2019.103786>
- [6] Sadik A. Digital storytelling: A meaningful technology-integrated approach for engaged student learning. *Educational Technology Research and Development*. 2008;56(4):487–506.
- [7] Hung C-M, Hwang G-J, Huang I. A project-based digital storytelling approach for improving students' learning motivation, problem-solving competence, and learning achievement. *Educational Technology & Society*. 2012;15(4):368–379.
- [8] Yang YTC, Wu WCI. Digital storytelling for enhancing student academic achievement, critical thinking. *Learning motivation: A year-long experimental study*. *Computers & Education*. 2012;59(2):339–352.
- [9] Giles RM, Kent AM. An investigation of preservice teachers' self-efficacy for teaching with technology. *Asian Education Studies*. 2016;1(1):32-41. <https://doi.org/10.20849/aes.v1i1.19>
- [10] Oigara JN, Wallace N. Modeling, training, and mentoring teacher candidates to use SMART board technology. *Issues in Informing Science and Information Technology*. 2012;9:297–315. <https://doi.org/10.28945/1623>
- [11] Kobayashi M. A digital storytelling project in a multicultural education class for pre-service teachers. *Journal of Education for Teaching*. 2012;38(2):215–219. <https://doi.org/10.1080/02607476.2012.656470>
- [12] Heo M. Digital storytelling: An empirical study of the impact of digital storytelling on pre-service teachers 'self-efficacy and dispositions towards educational technology.' *Journal of Educational Multimedia and Hypermedia*. 2009;18(4):405–428.

- [13] Banaszewski T. Digital storytelling finds its place in the classroom. *Multimedia Schools*. 2002;9(1):32–35.
- [14] Kajder S, Parkes K. Examining preservice teachers' reflective practice within and across multimodal writing environments. *Journal of Technology and Teacher Education*. 2012;20(3):229–249.
- [15] Lambert J. *Digital storytelling: Capturing lives, creating community*. 3rd ed. Berkeley: Digital Diner Press; 2009.
- [16] Matthews-DeNatale G. *Digital storytelling: Tips and resources*. Boston: Simmons College Boston; 2008.
- [17] Garcia-Sanchez S. Encouraging collaborative interaction in EFL Learners with video role-plays. *Ensayos-Revista De La Facultad De Educacion De Albacete*. 2016;31(1):149–164.
- [18] Kim SH. Developing autonomous learning for oral proficiency using digital storytelling. *Language Learning & Technology*. 2014;18(2):1-9
- [19] Oskoz A, Elola I. Bringing multimodal texts to the Spanish writing classroom. *ReCALL The Journal of the European Association for Computer Assisted Language Learning*. 2016;28(3):326–342. <https://doi.org/10.1017/S0958344016000094>
- [20] Vasudevan L, Schultz K, Bateman J. Rethinking composing in a digital age: Authoring literate identities through multimodal storytelling. *Written Communication*. 2010;27(4):442–468. <https://doi.org/10.1177/0741088310378217>
- [21] Xu Y, Park H, Baek Y. A new approach toward digital storytelling: An activity focused on writing self-efficacy in a virtual learning environment. *Educational Technology & Society*. 2011;14(4):181–191.
- [22] Anderson V, Chung J, Macleroy YC. Creative and critical approaches to language learning and digital technology: Findings from a multilingual digital storytelling project. *Language and Education*. 2018;32(3):24-32 <https://doi.org/10.1080/09500782.2018.1430151>
- [23] Angay-Crowder T, Choi J, Yi Y. Putting multiliteracies into practice: Digital storytelling for multilingual adolescents in a summer program. *TESL Canada Journal*. 2013;30(2):36-43. <https://doi.org/10.18806/tesl.v30i2.1140>
- [24] Krumsvik RJ. Teacher educators' digital competence. *Scandinavian Journal of Educational Research*. 2014;58(3):269–280. <https://doi.org/10.1080/00313831.2012.726273>
- [25] Janssen J, Stoyanov S, Ferrari A, Punie Y, Pannekeet K, Sloep P. Experts' views on digital competence: Commonalities and differences. *Computers & Education*. 2013;68(1):473–481. <https://doi.org/https://doi.org/10.1016/j.compedu.2013.06.008>

- [26] Bezemer G, Kress J. Writing in multimodal texts: A social semiotic account of designs for learning. *Written Communication*. 2008;25(2):166–195.
- [27] Kress G. Semiotic work: Applied linguistics and a social semiotic account of Multimodality. *AILA Review*. 2015;28(1):49–71.
- [28] Lankshear C. *Changing literacies*. Philadelphia: Open University Press; 1997.
- [29] Tan L, Zammit K. *Teaching writing and representing in the primary school years*. 2<sup>nd</sup> ed. Melbourne: Pearson Australia; 2018.
- [30] dan Cope K. *Multimodality and social semiosis: Communication, meaning-making, and learning in the work of Gunther Kress*. New York: Routledge; 2013.
- [31] Cameron D, Panović I. *Working with written discourse*. Sage Publishing. USA: 2014.
- [32] Burn A. *Making new media: Creative production and digital literacies*. New York: Peter Lang Inc., International Academic Publishers; 2009.
- [33] Mishra P, Koehler M. Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Journal*. 2006;108:1017–1054. <https://doi.org/10.1111/j.1467-9620.2006.00684.x>
- [34] Voogt J, Fisser P, Roblin NNP, Tondeur J, van Braak J. Technological pedagogical content knowledge - A review of the literature. *Journal of Computer Assisted Learning*. 2013;29(2):109–121.
- [35] dan Kleinsasser L. Exploring EFL teachers' call knowledge and competencies: In-service program perspectives. *Language, Learning, and Technology*. 2015;19(1):119–138.
- [36] Baser MY, Kopcha D, Ozden TJ. Developing a technological pedagogical content knowledge (TPACK) assessment for preservice teachers learning to teach English as a foreign language. *Computer Assisted Language Learning*. 2016;29(4):749–764. <https://doi.org/10.1080/09588221.2015.1047456>
- [37] Tseng J-J. Developing an instrument for assessing technological pedagogical content knowledge as perceived by EFL students. *Computer Assisted Language Learning*. 2016;29(2):302–315. <https://doi.org/10.1080/09588221.2014.941369>
- [38] Cohen L, Manion L, Morrison K. *Research methods in education*. London: Routledge Falmer; 2007.
- [39] Yin RK. *Case study research: Design and methods*. London: SAGE; 2003.
- [40] Patton MQ. *Qualitative research and evaluative methods*. Thousand Oaks; Sage Publishing. USA 2002.
- [41] Hawanti S. Implementing Indonesia's English language teaching policy in primary schools: The role of teachers' knowledge and beliefs.

- International Journal of Pedagogies and Learning. 2014;9:162–170. <https://doi.org/10.1080/18334105.2014.11082029>
- [42] Hardman J, A-Rahman N. Teachers and the implementation of a new English curriculum in Malaysia. *Language, Culture and Curriculum*. 2014;27(3):260–277. <https://doi.org/10.1080/07908318.2014.980826>
- [43] Widodo HP. Engaging young learners of English in a genre-based digital storytelling project. Cambridge: Cambridge University Press Language Teacher Research; 2016.
- [44] Clarke BV, Victoria. Using thematic analysis in psychology. *Qualitative Research in Psychology*. 2006;3(2):1-9 <https://doi.org/10.1191/1478088706qp063oa>
- [45] Creswell JW. Educational research: Planning conducting and evaluating quantitative and qualitative research. Upper Saddle River: Pearson; 2012.
- [46] Merriam SB. Qualitative research: A guide to design and implementation. Revised and expanded from qualitative research and case study application in education. San Francisco: Jossey-Bas; 2009.
- [47] Miles MB, Huberman AM. Qualitative data analysis: An expanded sourcebook. 2nd ed. Thousand Oaks: Sage Publications; 2015.
- [48] Wang S, Zhan H. Enhancing teaching and learning with digital storytelling. *International Journal of Information and Communication Technology Education (IJICTE)*. 2010;6(2):76–87. <https://doi.org/10.4018/jicte.2010040107>
- [49] Robin BR, Yuksel-Arslan P, Yildirim S. A phenomenological study: Teachers' experiences of using digital storytelling in early childhood education. *Educational Studies*. 2016;42(5):427–445. <https://doi.org/10.1080/03055698.2016.1195717>
- [50] Hung CM, Hwang GJ, Huang I. A project-based digital storytelling approach for improving students' learning motivation, problem-solving competence and learning achievement. *Educational Technology and Society*. 2012;15(4):368–379.
- [51] Meijerman I, Storm G, Moret E, Koster A. Development and student evaluation of an inquiry-based elective course on drug discovery and preclinical drug development. *Currents in Pharmacy Teaching and Learning*. 2013;5(1):14–22. <https://doi.org/10.1016/j.cptl.2012.09.009>
- [52] Shamsudin N, Abdullah N, Yaamat N. Strategies of teaching science using an inquiry based science education (IBSE) by novice chemistry teacher. *Procedia - Social and Behavioral Science*. 10(1);2013:583–592. <https://doi.org/10.1016/j.sbspro.2013.07.129>
- [53] Martinelli J, Zinicola D. Teaching science through digital storytelling. *Proceedings of Society for Information Technology & Teacher Education International Conference.1 (1) 2009:3802–3808*.

- [54] Al-Sulaimani AA. The importance of teachers in integrating ICT into science teaching in intermediate schools in Saudi Arabia: A mixed methods study. *Educational Technology, Research and Development*. 2010;March:1–313.
- [55] Jones S, Chapman K. Telling stories: Engaging critical literacy through urban legends in an English secondary school. *English Teaching: Practice & Critique*. 2017;16(1):1-13
- [56] Güler D, Bıkmaz FH. Teachers' views on the realization of the science activities in preschools. *Educational Sciences and Practice*. 2002;1(2):249–267.
- [57] Ohler JB. *Digital storytelling in the classroom: New media pathways to literacy, learning, and creativity*. Thousand Oaks: Corwin Press; 2007.
- [58] Smeda N, Dakich NSE. The effectiveness of digital storytelling in the classrooms: A comprehensive study. *Smart Learning Environments*. 2014;1(1):1–21. <https://doi.org/10.1186/s40561-014-0006-3>
- [59] Jakes DS. *Capturing stories, capturing lives: Storytelling,USA*. 2005.
- [60] Kotzer S, Elran Y. Learning and teaching with moodle-based e-learning environments, combining learning skills and content in the fields of math and science & technology. *Proceeding of 1st Moodle Research Conference*; 13-15 Sep 2012.

# Developing Digital Literacy Skill for Initial Teacher Education through Digital Storytelling

## ORIGINALITY REPORT

3%

SIMILARITY INDEX

0%

INTERNET SOURCES

2%

PUBLICATIONS

2%

STUDENT PAPERS

## PRIMARY SOURCES

- 1** Submitted to Program Pascasarjana Universitas Negeri Yogyakarta **1%**  
Student Paper
- 2** Khairunnisah ., Abdul Rahman Siagian, Happy Sri Rezeki Purba, Nikmah Sari Hasibuan. "Deixis in Traditional Wedding Ceremony ``Mangambat Boru" of Mandailing", KnE Social Sciences, 2023 **1%**  
Publication
- 3** Luisa Cagica Carvalho, Bruno Cibrão. "chapter 6 The Educational Use of Digital Storytelling in Virtual Classes of Entrepreneurship", IGI Global, 2018 **1%**  
Publication

Exclude quotes  On

Exclude bibliography  On

Exclude matches  < 1%