

# Digital storytelling to inspire and engage students in educational settings

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<p>The purpose of this thesis is to research how digital storytelling can be used in higher education to promote the 21st century skills. The researcher wanted to research what skills digital storytelling supports and how it can be used to engage and motivate students in higher education. This thesis will also research how students and educators perceive digital storytelling as a tool for learning and what are the challenges with using digital storytelling as a tool.</p> <p>This research-based thesis analyses academic articles related to digital storytelling to understand the potential of digital storytelling as a tool for engaging and motivating students. The commissioner of this thesis is Haaga-Helia marketing and communication students' and teachers' Creative Agency Krea. This thesis is part of an Erasmus+ project called Learn to Change that aims to find ways for educators and learners to use open-access digital tools to create impactful digital content. The aim of this thesis is to find reliable information on digital storytelling that can be implemented in higher education. Findings of this thesis can be used to promote the 21<sup>st</sup> century skills needed in marketing and business.</p> <p>The theoretical background is based on literature review to understand digital storytelling as a concept and to establish how it is used in this thesis. The theoretical background also covers how digital storytelling has been used in education. This is a qualitative research and the research method used in this thesis is thematic content analysis. The data for this research consists of ten academic articles that are peer reviewed, published after the year of 2010 and deal with digital storytelling in higher education or digital storytelling in civic engagement. The analysis was done with an inductive approach: the researcher did not have any pre-existing notion on digital storytelling and the main themes for this research were determined by the recurring themes in the data.</p> <p>Findings of this study indicate that digital storytelling supports students' decision-making skills, problem solving skills, critical thinking skills as well as their social skills. Digital storytelling is an interactive way of learning, which provides the students with a more in-depth understanding of the topic at hand. Because of its interactive nature, digital storytelling also makes the students take more control of their learning, making them active participants instead of passive listeners. Findings also indicate that digital storytelling as a tool is preferred by the students over traditional learning methods. Challenges with digital storytelling as an educational tool were related to poor teamwork, inefficient tools or skills as well as time. Digital storytelling projects are time-consuming and that raises questions whether the benefits are worth the time.</p>	
<b>Keywords</b> Digital storytelling, storytelling, student engagement	

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# 1 Introduction

This research study was conducted to find relevant information on how digital storytelling can be used in education to promote the 21<sup>st</sup> century skills and to engage and motivate students. In this research study, the researcher studies the potential of digital storytelling as a tool in higher education. The aim is to find reliable information on digital storytelling that can be implemented in higher education such as universities and universities of applied sciences.

The first part of this thesis is the theoretical framework for the research study where digital storytelling as a concept is established for this study. In the theoretical framework, the researcher reviews literature about digital storytelling in general and in educational environment. The empirical part starts with explaining the methodology. The criteria for the articles used as a data and the way of analysing the data will also be justified and presented. After covering the methodology, the results are presented. The last part of this thesis is the discussion part, where the main results are summed up and the validity and reliability of this study are evaluated. The researcher's own learning and the limitations of this study are also examined in the discussion part.

## 1.1 Objectives

The main objective for this research study is to find reliable information about digital storytelling as a tool for promoting 21<sup>st</sup> century skills that can be used in higher education. The purpose of this research is to study how digital storytelling can be applied in higher education: its benefits, skills that can be acquired or improved upon with using digital storytelling, students' and educators' experiences of digital storytelling, and challenges of digital storytelling as a tool for learning and teaching.

The main research problem is:

How can digital storytelling be used in higher education?

The research questions are:

1. How can digital storytelling be used to engage students in education and social activities?
2. How does digital storytelling support 21<sup>st</sup> century skills?
3. How do students and teachers experience digital storytelling?
4. How can digital storytelling be implemented into education?
5. What are the challenges of using digital storytelling in education?

This research study is specifically aimed to find ways to engage students and to promote 21<sup>st</sup> century skills in higher education using digital storytelling. Ten peer-reviewed research articles were selected as the research data for this study. Articles selected as the research data are international academic research studies that address either digital storytelling in higher education or in civic engagement and are published after 2010. Fifteen articles were examined more closely as a potential dataset, but the number was subsequently narrowed down to ten academic articles. The articles that were selected for the final dataset either offered useful general information about digital storytelling or provided an interesting point of view relevant to the study.

## **1.2 The Significance of the Study**

This thesis contributes to a bigger collaborative between universities across Europe. This thesis provides information about digital storytelling in educational environment for an Erasmus+ project called Learn to Change – Collaborative Digital Storytelling for Sustainable Change (2021 - 2023). The Learn to Change project aims to support university students and their teachers to create impactful digital stories to support and innovate change for more sustainable tourism. The main objectives of the project are to research and develop collaborative digital storytelling solutions that 1) promote meaningful interaction between university students, teachers and business partners, 2) support teachers in universities in the use of open-access digital tools to develop students' intercultural communication skills to promote sustainable goals and 3) encourage students to create impactful digital stories with international peers and industry partners. This thesis forms part of the background research needed for the implementation of the Learn to Change project.

The skills needed in the job market have changed. People in the world of work are expected to have at least some digital skills and strong level of non-cognitive skills. Non-cognitive skills include teamwork, planning, and communication (Gonzalez Vazquez eds. 2020, 32). It is necessary to prepare students with such skills to help them enter the job market. The researcher will explore how digital storytelling can be used as a tool to prepare students with the necessary skills.

The results of this study will provide a deeper understanding of the potential and challenges of digital storytelling in education. The findings of this research study can be used to understand the potential of digital storytelling as a tool for promoting the 21<sup>st</sup> century skills in higher education institutions and hopefully implement digital storytelling into their curriculum.

Because of the Covid-19 pandemic, teaching has moved rapidly to online platforms, which

is one more reason to find more engaging ways to learn and interact with others. Students are more in charge of their own learning and need to be more independent than before. This study provides useful information about digital storytelling as an exciting and engaging way to learn skills needed in the job market.

### **1.3 The Commissioner**

The commissioner is Haaga-Helia marketing and communication students' and teachers' Creative Agency Krea. Krea is a pedagogical concept and an inhouse creative office established in 2015. At Krea, students get real-life work experience while studying at Haaga-Helia University of Applied Sciences. Krea provides external clients with a variety of marketing and communications services, such as media, marketing and communications plans, marketing campaigns, events, and research services. The role of the teachers in Krea is to guide and support students. They also act as liaisons for the companies that buy services from Krea. The role of the students is to provide the services under the guidance of the teachers. (Krea 2021.)

## **2 Digital Storytelling**

As humans, we use stories and storytelling for many purposes. We can learn from stories, we can use them to connect with others, and we can use them to understand the world and make sense of information. (Ohler 2013, 2-3.) The impulse to tell stories can be considered universal, as stories have been told in every culture throughout history. When humans invent new ways to communicate, new ways to tell stories appear. Almost every type of communications technology has been used as an instrument to tell stories, from radio to vinyl records to motion pictures. (Alexander 2017, 5.) With digitalization, storytelling has also taken a digital form.

Digital storytelling got started in the 1994, when Joe Lambert, Nina Mullen and Dana Atchley established the San Francisco Digital Media Center, which later moved to California and was renamed the Center for Digital Storytelling and in 2015 was renamed again to StoryCenter (StoryCenter 2021). They wanted to preserve oral stories and offered an arts program that included computer training around digital storytelling (Lambert 2013, 1). When they started to work together, Atchley, Lambert and Mullen noticed that people with little to no experience with digital tools could create emotional stories using the new digital media technology. Together they created a curriculum that serves as a base for digital storytelling. (StoryCenter 2021.)

Even though digital storytelling has existed for decades now, the technology in the 1980s or in the early 1990s was not optimal for telling stories, let alone stories with visual aspects. Composing stories took a lot of time and the end results were fuzzy. Since then, the technology and software has improved significantly and many of us can engage in digital storytelling with our phones. (Ohler 2013, 2-4.)

### **2.1 Definition of Digital Storytelling**

The definition of digital storytelling is quite wide. It can encompass anything from personal stories to historical accounts to tutorials. Ohler (2013, 16) sees Digital storytelling as a coherent narrative that is created combining multiple media with personal digital technology (Ohler 2013, 16). Alexander (2017, 3) also describes digital storytelling as storytelling with digital technologies. Digital stories are created with many different digital devices and with technological advances the toolbox is only growing. Digital stories can be real stories or fictional, creators can be professional or amateurs. (Alexander 2017, 3-4.) Broadly, digital storytelling can be defined as telling stories with digital tools. Both Alexander (2017) and Ohler (2013) focus their definition on the tools or the finished product.



As a pioneer of digital storytelling, Lambert (2013, 37-38) defines digital storytelling more from the process point of view. He questions whether telling a story with a computer really is a definition. He sees digital storytelling as a personal reflection on a subject. In his teachings, he emphasizes the creators' intent to convey emotion through self-expression and self-awareness rather than focusing on the final product, the tools, or the audience. (Lambert 2013, 37-38.)

Simply put, digital storytelling is storytelling with digital tools but when researched further the creator's perspective or relationship to the story is a significant part of digital storytelling. The creator offers new insight by appealing to the emotions of the viewer (Lambert 2013, 37). Emotional attraction is a key element of catching the audiences' attention effectively with digital storytelling.

Even though digital storytelling can be applied to many different types of stories, they can be categorized into three main categories. The first category is personal narratives, stories that describe a significant event in someone's life. Personal narratives give an insight to different backgrounds of fellow humans and facilitate discussion about current events and obstacles people have to overcome. The second category is historical documentaries that deal with dramatical events in history. The third category is stories told to inform or instruct viewers on a particular topic. Every digital story tells a story of something, but the difference with the third category is that digital stories can be used to make difficult concepts more understandable. (Robin 2011.)

Digital storytelling as an educational tool and the use of digital storytelling projects in educational settings are described in more detail in the chapter 3. Chapter 3 focuses on the use of digital storytelling in higher education. The projects are mostly described as personal narratives where the focus is on the narrative, while the pictures, sound effects, and background music are only used to enhance the story (Andrade et al. 2013, 3; Zuana 2018, 28).

## **2.2 Elements of Digital Storytelling**

The Center for Digital Storytelling currently known as the StoryCenter has compiled seven elements of digital storytelling that are commonly used as a guideline for digital storytelling. (Digital storytelling 2021a.)

### **2.2.1 Point of view**

Digital storytelling is about the storyteller's point of view. What does a storyteller want to convey with their digital story and what is their perspective in their story? The story does not have to be deeply personal to the storyteller, but the storyteller has to work out the why of the story. Why is the story meaningful to them and what is their personal connection to the story? The storyteller provides an insight that is unique to them, something that only they can provide. (Lambert 2013, 54-57.)

### **2.2.2 A Dramatic Question**

A dramatic question refers to the element that holds the attention of the viewer. The storyteller can impose a problem or an obstacle that has to be resolved in the story. The problem can be solved in the digital story or the digital story can provide enough information that the viewer can solve the problem on their own. (Digital storytelling sites 2021.)

### **2.2.3 Emotional Content**

Digital storytelling should always aim to evoke emotions. Whether it is humour, sadness, fear, anxiety, solitude or any other, the creator should write their story in a way that evokes emotions. This requires the creator to think about the viewer's perspective and how they might perceive the story. One story can evoke different emotions with different people, because we all have different prior experiences that mould our impressions. (Digital storytelling sites 2021.)

### **2.2.4 The Gift of Your Voice**

Using one's own voice is a powerful way to personalize a story. According to Lambert (2013, 63-64) the best way to convey the emotional tone of the story is with voice over. Even though background music can be used to set the ambient, it is the recorded voice of the creator is what makes a "digital story" a digital story. In digital stories, the voice leads the story ahead, but it also presents the storyteller's unique connection to the presented experience. When the voice-over is effortless and seems organic, it will draw the audience deeper in to the story. (Lambert 2013, 63-64.)

### **2.2.5 The Power of the Soundtrack**

Music and other sound effects can be used to enhance the narrative, but they should be used carefully. The creator must really think whether the music adds anything to the story or takes something away from it. Digital stories that only have the voice-over of the storyteller can be very effective at conveying the emotional tone, but sometimes other sounds

can be added to mark a change in the story or make sense of the place. For example, traffic sounds or birds humming give the audience a more comprehensive sense of place. When the sound layers are used carefully and with intent, they add more complexity and depth to the story. (Lambert 2013, 64-64.)

### **2.2.6 Economy**

Digital stories are short, usually from two to ten minutes long (Digital storytelling 2021b.). Digital stories can be created by people with only a little or no experience with digital tools. With short length, it is easier to capture the audience's attention. Digital storytelling is all about compact stories that have an emotional aspect. This means that the creator has to decide the parts of the story that are absolutely necessary in order to convey the right tone. This type of creative limitation forces the creator to economize the information in their story, which in turn allows the audience to make the connections. (Lambert 2013, 65-67.)

### **2.2.7 Pacing**

Pacing the story is another element of digital storytelling. Just like with sounds, pacing moulds the story and gives it more layers. Fast pacing can give a sense of urgency or slow pacing can give a serene feel to the story. There should be space for the audience to process the information and experience the story in their own minds. Pacing adds another layer of meaning to the story and invites the audience to listen more deeply. (Lambert 2013, 67-68.)

## **2.3 Storytelling for the 21<sup>st</sup> Century**

As of late digital storytelling has been adapted to many purposes. Digital storytelling is very suited for community engagement, health and human services, telling an organization's story, team building, youth programs, reflective practises, activism, and education, among many other fields. (Lambert 2013, 126-136.) With technological advancements and new generations growing up in the digital era, the possibilities for digital storytelling are vastly expanding.

In 2017, Alexander (2017, 239) predicted that people would have "a miniature studio" in their mobile devices. With that, he refers to people having access to better production and creation tools and better connections with both media and peers. He concludes that with that access, people will share more stories in real time. (Alexander 2017, 239.) Mobile phones have made digital storytelling much easier. There are new photo and video editing

applications created at a rapid pace all over the world. With a massive variety of applications to choose from, there are also many options as to where the creator can share their finished product. The whole technical part of the digital storytelling process can be done with a single mobile phone.

At the moment, one thing that the creator cannot get from the application is the story itself, which is the core of the process. In the future, there might be applications that write personal stories using all the data that is already on the internet. Automated writing is already here on a smaller scale. Search engines are already suggesting searches options and phones are autocorrecting words that are being typed. (Alexander 2017, 238). Whether computer-generated stories have the same effect as personally written stories is a question for the future.

Chapter 3 describes digital storytelling in educational settings, especially in higher education. It covers different types of digital storytelling projects and digital storytelling as an educational tool for students and teachers. Chapter 3 also presents different digital storytelling projects in higher education as an example as to why teachers have used digital storytelling as a teaching method and what they have hoped to achieve with the projects.

### **3 Digital Storytelling in Education**

Digital storytelling has been established as an effective educational tool to improve students' digital skills that are necessary in the western world (Ohler 2013, 48). Students who have born in the digital era are very capable with digital devices and can appreciate creating and consuming digital stories. (Alexander 2017, 224.) 53.6 percent of the world population uses social media by consuming and creating content (Smarts Insight 2021). It is only reasonable to take that into consideration with education. Digital storytelling is part of the language of social media users. These people feel comfortable with multimedia and see the internet as a creative social space. (Ohler 2013, 11.)

#### **3.1 Digital storytelling projects**

A study conducted in South Africa by Ivala, Gachago, Condy and Chigona describes digital storytelling as first-person video narratives. They operated on the notion that the creators of digital stories are amateurs with digital media and the stories are usually personal experiences. The students involved in that project put their story together by using recorded voice, music, other sounds, pictures and moving images. In their study, digital storytelling was used in a professional development course to help students gain reflective skills. The project took eight weeks and the students produced a digital story in groups of 4-5 members. The students wrote a script that was adapted based on feedback from the teacher and other students. Then they recorded the story and added pictures or moving images to the narrated story. At the end, they added background music. The final digital stories were around five minutes long. (Ivala, Gachago, Condy & Chigona 2013, 82-84.)

Zuana (2018) conducted a study about digital storytelling as a tool for teaching English as a second language. He sees digital storytelling as multimedia projects, where technology is used to tell personal stories. He describes digital stories as a combination of photographs, video, audio and music that connects the information with emotions. In his study, he observes students producing digital stories to improve their English language skills. The digital stories were produced as a singular project outside of the classroom. Each student produced their own story by recording their own voice and adding pictures, video and background music of their choosing. The final products were shown in the class and the student received feedback from the teacher and other students. (Zuana 2018, 28, 30-31.)

Andrade, Bromberg and Techatassanasoontorn (2013) carried out a study in New Zealand where they examined the suitability of digital storytelling for learning about information systems (IS). They found digital storytelling useful for supporting student centred learning and especially discovery learning. They describe digital storytelling as a way to

interpret the data and transform it into an art form. Digital storytelling should not aim to present a raw form of data, instead the aim should be to encourage the audience to engage with the data or topic. In their case study, students produced digital stories that connected a difficult IS concept to real-life practice. Students worked in groups of four. Before composing the digital story, students first created a plot and a production plan and then produced their story outside of the classroom. At the end, they presented the final product in the classroom and received feedback. (Andrade et al. 2013, 3, 5-7.)

What all the case descriptions have in common is that digital storytelling is used to combine multiple media to create a story that appeals to viewers' emotions. Where the descriptions mainly differ is whether the story is a personal experience or not. Zuana (2018) and Ivala et al. (2013) had their project participants tell a personal experience in the form of a digital story whereas Andrade et al. (2013) had the participants explain a difficult concept by connecting the concept to practice. Ivala et al. (2013) also describe digital stories as stories created by amateurs, but this is not shared by Zuana or Andrade et al.

In this thesis, digital storytelling is defined broadly since it aims to understand its potential in general. Digital storytelling refers to both personal stories and to the aspect of connecting concepts with practice in this thesis. In this study, digital storytelling is storytelling with multimedia, and the emotional aspect described by Andrade et al. (2013), Ivala et al. (2013) and Zuana (2018) is also emphasized. As a learning tool, digital storytelling is a way for dissecting and reorganizing data to facilitate discussion. To be successful as a tool, the emotional aspect of digital storytelling is needed.

### **3.2 Tool for Teachers**

Teachers can make their own digital stories or they can have their students create digital stories. Digital stories created by the teacher can be used to introduce new information in a more understandable way. A digital story can also function as a new type of educational material to facilitate conversation about a specific topic. Subject areas can be one aspect of an issue or a larger theme. Teachers can also present emotional stories in hopes to inspire or engage students (Alexander 2017, 225, 229-230.)

Digital storytelling can be used to teach a topic and to see how the students have understood the topic. It can be used to see what the students have learned. Instead of a final exam, students can make a digital story as a class project to show that they have understood the subject matter. Seeing how students have understood a specific topic also gives teachers an opportunity to reflect on how they have performed as an educator. Students

have to research the topic in order to make the digital story. The process also has a creative side to it. This creative process of making digital stories helps students and teachers to understand and process new media more proactively, which is a skill needed to cope in today's information overflow. (Ohler 2013, 26-28, 83-85.)

According to Ohler (2013, 15) teachers do not need advanced technical skills in order for them to incorporate digital storytelling into their curriculum as a student project. Students have been immersed in the technological and digital environment and have the means to obtain the required technical skills on their own. The teacher's role is to act as a guide for the students and help them with time management and decision-making throughout the project. (Ohler 2013, 15.)

### **3.3 Tool for Students**

As a student production, a digital story introduces the student to the creative process of digital storytelling. Students learn to mix different media and they get to use tools that are familiar to them from their social media contexts. Digital storytelling gives them the ability to process and filter content in today's digital world (Alexander 2017, 224-225). Digital storytelling also introduces students to the art form of storytelling and can spark their interest in writing and reading. With digital storytelling, the students get a modern take on traditional literacy, which includes reading and writing as well as understanding the new media. (Ohler 2013, 84.)

With project-based learning, students get to work together and develop their social skills. They have to communicate with one another constructively and find compromises to further their projects. They have to express their opinions to others in an understandable way. Students also get an opportunity for peer-learning. When they do research on their subject matter, they have to present and defend their finding to others, which enables them to practice their presentation skills and communication skills. (Alexander 2017, 226-227.)

Nowadays people have access to more information than ever before, and that information overload requires skills to analyse the information available. The process of making digital stories also requires those skills. Digital storytelling can be used to understand complex subjects by giving them context. When students create digital stories, they have to research, learn, sort out, and reorganize the information at hand in order to reconstruct it into a narrative story. (Alexander 2017, 225-226.)

## 4 Research Methods

This research-based thesis was executed with a qualitative research approach to answer the research questions. Ten peer reviewed academic articles were used as the data for this research and the method used to analyse the collected data was qualitative thematic analysis, with an inductive approach. In the data collection phase of the research, the researcher used a content analysis method for determining which articles would act as the final data. The final analysis was carried out using thematic analysis.

The research was executed in four phases as presented in Figure 1. First the data was collected and selected by reviewing the data and coding it. The second phase was building the coding frame for the thematic analysis and the third phase was analysing the data using thematic analysis. The last phase was reporting the results, with each theme reported separately.

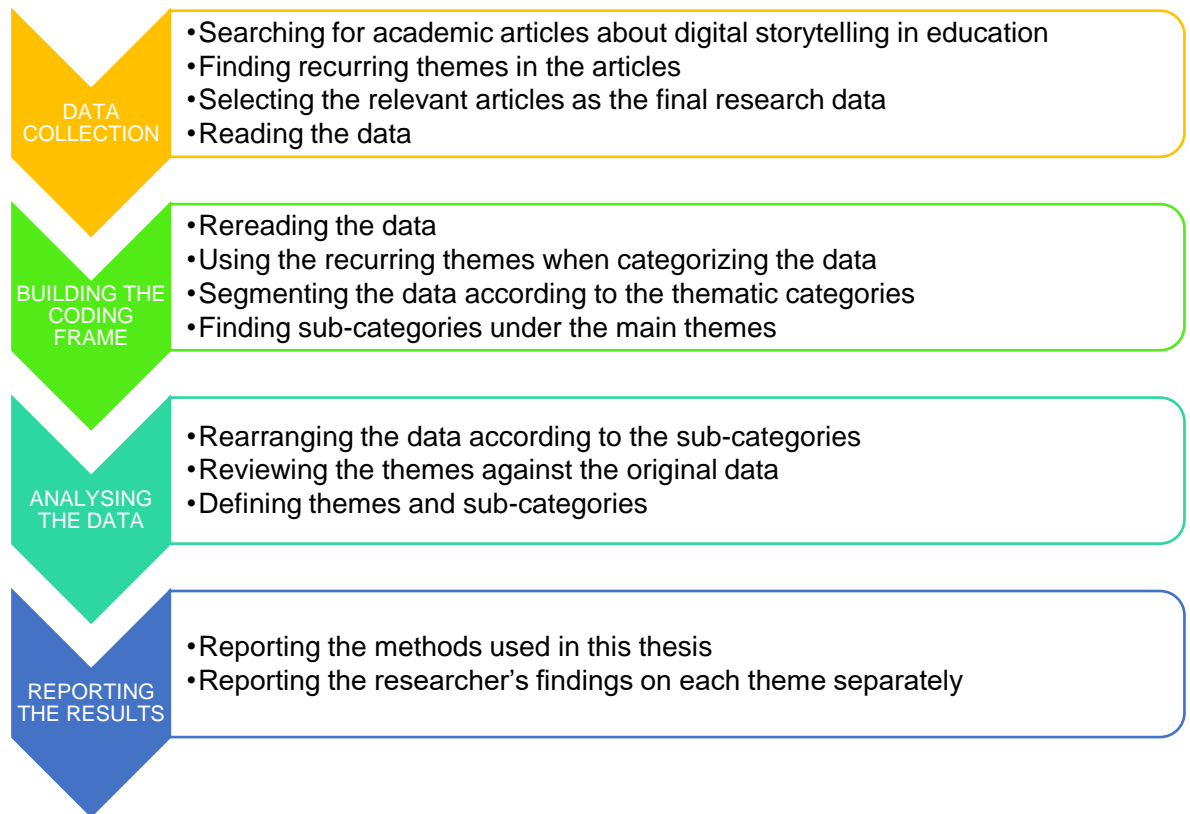


Figure 1. Steps of the research process

Structuring the research study to four phases helped with creating a timetable and overall planning of this research study. Building the Coding Frame phase is described separately in this thesis, because it constituted a large part of this research study. That phase overlapped with both the Data Collection phase and with the Analysis phase.



## **4.1 Qualitative research**

The aim for this research study was to provide useful information about digital storytelling that can be used in higher education. Research methods for this research-based thesis were primarily dictated by the data that was used. The purpose of this thesis was to analyse academic articles related to digital storytelling. A qualitative research approach was chosen since the data is non numeric and unorganized to begin with.

All studies that deal with non numeric and unorganized data can be described as qualitative research. It is a wide concept that is used to describe studies that attempt to understand a phenomenon from the perspective of the participants of the study. Qualitative research aims to understand concepts, perspectives, experiences, or meanings that the participants give to the topic of the study. It is not a method in itself, but a wide approach and covers many methods and practices. (Juuti & Puusa 2020, Introduction.) Qualitative data can be textual material such as interview transcripts, documents and field notes or it can be visual content such as pictures, videos, and websites (Schreier 2012, 1-3).

Compared to quantitative research, qualitative research provides more in-depth insights into the research problem. Quantitative research consists of numbers and statistics, provides general facts about the topic but cannot be used to understand complex phenomenon more deeply. (Sreefkerk 2021.) This research aims to understand digital storytelling in educational settings. Because digital storytelling is a complex phenomenon and the research data (a selection of peer-reviewed research articles) is in text form, a qualitative research approach was chosen.

## **4.2 Data collection**

After establishing the aim and scope of this thesis, the researcher started to search reliable and relevant academic articles about digital storytelling in higher education. The researcher used Google Scholar and Academic Search Elite (EBSCO). Both search engines provide a wide search for international academic literature such as articles, journals, theses, books, conference papers and other materials from one place (EBSCO 2021; Google Scholar 2021).

The selection criteria for the articles were the following:

- published after 2010
- peer reviewed
- academic
- addressed digital storytelling in higher education/civic engagement

- international.

The page number of the articles was not an exact criterion for the articles but was something that the researcher was mindful of. Articles with less than six pages provided a superficial overview of what digital storytelling is but did not provide useful information on how it can be used or any specific information on the benefits of digital storytelling as an educational tool. For that reason, articles shorter than six pages were excluded from the research data.

The researcher selected fifteen articles related to the topic of the thesis by using the criteria mentioned above. The specific themes of the study were determined by the research material. The abstracts of the articles were analysed with an exploratory approach to outline the further analysis of the articles. An exploratory approach refers to a method in which the themes or codes are not predetermined before the analysis. Instead, the codes are derived from the data. (Guest, MacQueen & Namey 2014, 6.) All fifteen articles selected for further review are listed in the table 1.

Table 1. List of the research articles

Number	Title	Author	Year
1	Using Digital Storytelling to Facilitate Critical Thinking Disposition in Youth Civic Engagement: A Randomized Control Trial	Chen 2019	2019
2	Digital Storytelling: An Attractive Media to Teach Narrative Text in Speaking Class	Zuana 2018	2018
3	Digital Literacy Learning in Higher Education Through Digital Storytelling Approach	Chan, Churchill & Chiu 2017	2017
4	Digital Storytelling: New Opportunities for Humanities Scholarship and Pedagogy	Barber 2016	2016
5	The Power of Digital Storytelling to Support Teaching and Learning	Robin 2016	2016
6	Integrate Digital Storytelling in Education	Alismail 2015	2015
7	Enhancing 21st Century Learning Skills Via Digital Storytelling: Voices of Malaysian Teachers and Undergraduates	Ming, Sim, Mahmud, Kee, Zabidi & Ismail 2014	2014
8	Using Digital Storytelling to Engage Student Learning	Suwardy, Pan & Seow 2013	2013
9	Enhancing Student Engagement with Their Studies: A Digital Storytelling Approach	Ivala, Gachago, Condy & Chigona 2013	2013
10	Engaging Students: Digital Storytelling in Information Systems Learning	Bromberg, Techatasanasoontorn & Andrade 2013	2013
11	Educational Uses of Digital Storytelling all around the World	Yuksel, Robin & McNeil 2011	2011

12	The Pedagogy of Digital Storytelling in the College Classroom	Doerr-Stevens, Raimist & Jacobs 2010	2010
13	Digital Storytelling as Narrative Pedagogy	Garcia & Rossiter 2010	2010
14	Digital Storytelling as Web Passport to Success in the 21st Century	Malita & Martin 2010	2010
15	Developing A Framework for Advancing E-Learning through Digital Storytelling	Smeda, Dakich & Sharda 2010	2010

The researcher used a coding method to find recurring themes in the abstracts of the articles. The coding method used in this part of the research study was a simplified version of the method usually used in content analysis. The codes provided internal notes for the researcher, outlined the information that is relevant to the research and functioned as a description of the text (Sarajärvi & Tuomi 2018, 104-105). After the coding process, the codes were rearranged, merged and turned into themes. The researcher combined “student experiences” and “teacher experiences” as one theme “experiences”. “Student engagement” and “student motivation” were also regarded as one theme. The themes that recurred in the abstracts were used to define the research questions presented in the introduction chapter of this thesis.

The recurring and final research themes:

- engagement and motivation
- learning outcomes
- implementation
- experiences
- challenges.

After determining the themes, the researcher proceeded to familiarise herself with the potential data by reading and rereading the articles. The coding method commonly used in content analysis was used to analyse the articles, with the themes or codes derived from the research questions and the coding of the abstracts (Sarajärvi & Tuomi 2018, 135-138). To help determine which ten articles would act as the final data for this research the researcher quantified the coding data from all fifteen articles. Microsoft Excel was used to keep count on each code present in each article (Table 2). The articles were numbered in order to keep the tables and analysis clearer. When main ten articles were selected, they were not renumbered, but they were referenced by the number they received at the data collection phase.

Table 2. The count of each code present in each article

Article	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Engagement/Motivation	4	6	10		5	5		12	19	8	2	1	2	2	5
Learning outcomes	9	7	15	3	8	10	6	9	2	8	18	1	4	2	2
Implementation		7	8	1	15	5	1	9	6	12	8	7	3	1	1
Experiences	1	7	8		1	1	12	10	13	10	3	1			
Challenges		4	5						1	6	9		1		
Total	14	31	46	4	29	21	19	40	41	44	40	10	10	5	8

The quantified data was a contributing factor on selecting which articles would be the final data, but it was not the only criteria. The researcher also took into account the quality of the information in the articles. The final set of research articles are listed in table 3. Articles 2, 3, 5, 8, 9, 10, and 11 were selected for the final research data since the themes were extensively handled in the articles. Article number 6 had a lot of mentions of the themes, but the information was largely second-hand information and for that reason it was excluded from the final research data. Articles 1, 7, and 13 did not have as many mentions of the themes as the other articles selected for the final research data, but the information in those articles was presented from a perspective that was relevant to this research study. Article 1 represented an angle different from the rest of the articles and provided relevant information about the engagement aspect of digital storytelling from a civic engagement perspective. Article 7 provided valuable insight into teachers' experiences and provided detailed information about the learning outcomes. Article 13 provided relevant information about pedagogy. The notes written after reading each article can be seen in Appendix 1.

Table 3. The final set of research articles

Number	Title	Author	Year
1	Using Digital Storytelling to Facilitate Critical Thinking Disposition in Youth Civic Engagement: A Randomized Control Trial	Chen 2019	2019
2	Digital Storytelling: An Attractive Media to Teach Narrative Text in Speaking Class	Zuana 2018	2018
3	Digital Literacy Learning in Higher Education Through Digital Storytelling Approach (GS)	Chan, Churchill & Chiu 2017	2017
5	The Power of Digital Storytelling to Support Teaching and Learning	Robin 2016	2016
7	Enhancing 21st Century Learning Skills Via Digital Storytelling: Voices of Malaysian Teachers and Undergraduates	Ming, Sim, Mahmud, Kee, Zabidi & Ismail 2014	2014
8	Using Digital Storytelling to Engage Student Learning	Suwardy, Pan & Seow 2013	2013
9	Enhancing Student Engagement with Their Studies: A Digital Storytelling Approach	Ivala, Gachago, Condy & Chigona 2013	2013

10	Engaging Students: Digital Storytelling in Information Systems Learning	Bromberg, Techatassana-soontorn & Andrade 2013	2013
11	Educational Uses of Digital Storytelling all around the World	Yuksel, Robin & McNeil 2011	2011
13	Digital Storytelling as Narrative Pedagogy	Garcia & Rossiter 2010	2010

After the final data had been selected, the researcher analysed the data systematically to increase the reliability of the research. The analysis process was also reported thoroughly. The analysis of the dataset is explained in detail in the next chapter.

### 4.3 Data analysis

A thematic analysis method was used to analyse the data. Thematic analysis was chosen because it is better suited for an in-depth interpretation of the data and for understanding complex meanings. Other word-based analysis methods focus on word count or searching specific words within the data. While they may have higher reliability, they are also limited in terms of context. Especially if software is used to analyse the data and interpretation is minimal, the context and key concepts may end up being overlooked. (Guest et al. 2014, 9-10.)

Thematic analysis is more than counting words and quantifying a qualitative data. It is used to find inexplicit and explicit themes or ideas in the data. (Guest et al. 2014, 10.) In this research, the objective was to understand the potential of digital storytelling in more depth. According to Braun and Clarke (2006, 5) the thematic analysis is a flexible tool for examining qualitative data and provides an extensive and detailed story of the data. This is why the researcher chose a thematic analysis method for this research study (Braun & Clarke 2006, 5).

The analysis was carried out with an inductive approach: the sub-categories were not pre-determined and were derived from the material. However, the main themes were already determined in the data collection phase and reused in the analysis phase. The researcher examined the data from the perspective of the research questions. The main themes and research questions guided the analysis but did not restrict the perspective to any pre-existing hypotheses.

The analysis was carried out using a 6-phase structure of thematic analysis processes created by Braun and Clarke (2006). Braun and Clarke's thematic analysis process is not a set of strict rules to follow exactly but rather a set of useful guidelines to help structure the

analysis process and eliminate the reliability problems with qualitative analyses. The process of thematic analysis is not a linear process where after finishing a phase you move on to the next. Rather, the researcher moves back and forth with the phases if needed. (Braun & Clarke 2006, 16-23). In this research, the researcher came back to the phase one many times and reread the data to find the most relevant information.

Braun and Clarke's phases to thematic analysis

1. Familiarizing yourself with your data
2. Generating initial codes
3. Searching for themes
4. Reviewing themes
5. Defining and naming themes
6. Producing the report (Braun & Clarke 2006,16-23).

In this research study, the data collection phase and analysis phase partly overlapped, in a sense that the main themes were the same in the data collection phase and the analysis phase. The data was also sectioned under each theme in the data collection phase. Phases 1-3 of Braun and Clarke's model were completed in the data collection phase and described in the data collection chapter (Chapter 4.2). Phase six refers to writing this thesis.

Phase 4, theme reviewing, is about refining the themes and reviewing that they coincide with the research questions and the objective of the study. The themes should form a logical unity but still be individually distinctive from each other. (Braun & Clarke 2006, 20.) When reviewing the main themes, the researcher reread the data with the themes in mind and since the research questions were derived from the themes, the researcher concluded that the main themes are relevant to the research questions. The researcher also concluded that the themes are aligned with the objective of the study and work as a coherent unity.

The fifth phase of the analysis process is about finding the essence of each theme. The thematic analysis is not about paraphrasing the data. It is about analysing why the themes and data extractions are important and interesting. Defining the themes means examining that the themes do not overlap with each other too much and finding what aspects of the data each theme brings forward. In this phase, the themes can also be sectioned to sub-themes or sub-categories to give structure to each theme. The final names of the themes and sub-categories are also determined in this phase. They need to be precise and accurately represent what the theme or sub-category is about. (Braun & Clarke 2006, 22-23.)

In the fifth phase, the researcher followed Braun and Clarke’s guidebook and segmented the themes into sub-categories to further reorganize the information in the data and to find more specific patterns. The sub-categorisation led into a more logical and consistent account of the data and was a crucial part in understanding the essence and aspects of each theme. From the themes and sub-categories, a thematic map was created (Figure 2).

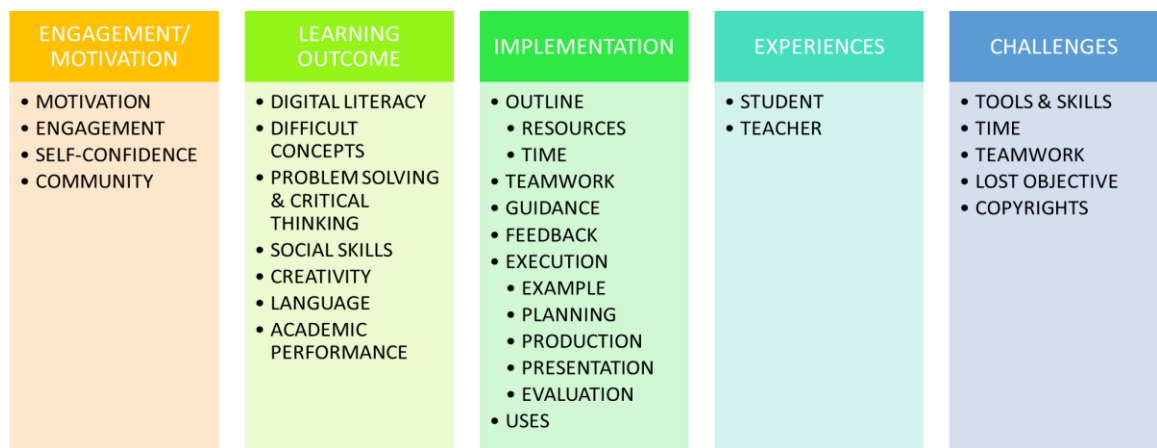


Figure 2. Themes and Sub-categories

The number of sub-categories under each theme varied. Themes “Learning outcome” and “Implementation” had many sub-categories, but the theme “Experiences” was sectioned to only two sub-categories as can be seen in Figure 2. The number of sub-categories was determined by the material. The researcher read the dataset (the articles) many times to find and determine the sub-categories. The theme “Implementation” had too many sub-categories thus some categories were merged under one sub-category to arrange the information more coherently. The researcher also noticed that there were data extractions about creativity under two themes (Learning Outcome and Motivation/Engagement). After reading the data extractions again and comparing them to the research questions the researcher decided to place all the data extractions under the Learning Outcome theme.

The last phase was the reporting, where the researcher wrote the analysis of the data and explained the results. In the report, the researcher did not just present the data, but analysed it. The themes were represented in the report individually and across each other. To demonstrate the presence of each theme in the data, the researcher used original data extractions in the report. Data extractions were also used to provide evidence for the accuracy and validity of the analysis. The report provides an interesting, logical and coherent account of the data, while also explaining how the researcher came to certain conclusions.

## 5 Results

This chapter reflects on the collected research articles as a dataset. The results are presented as individual themes but supportive or differing information across themes are also discussed. Data extractions from the dataset are used as examples or to draw attention to particularly interesting information.

### 5.1 Motivational Aspects of Digital Storytelling

There are 67 data extractions from the dataset regarding students' motivation or engagement with their studies. 23 of those 67 data extractions are about motivation, 26 about engaging students, 7 about building a sense of community and 11 are about self-confidence. All of these sub-categories address students' opportunities to take more control of their own learning and how digital storytelling can improve their learning experiences.

Throughout the dataset, student motivation is stated as a major benefit of using digital storytelling in education. Especially when students create their own digital stories. Students are more motivated to learn about the subject they make the digital story about when they get to use digital tools. Combining text, visuals and audio is a familiar way of communication for generations who have grown up with modern technology. Using the combination in learning environments motivates them to interact with the topic of their studies. A data extraction from Article 8 explains how digital storytelling even motivates the less enthusiastic students and how through digital storytelling, students connect the theories they learn in class to personal stories. By doing that, they form emotional connections to the theories, which results in deeper learning.

“Overall, successful storytelling goes beyond engaging students: it inspires less enthusiastic and less motivated students. The pedagogy works by evoking the student's emotional engagement with the topic, where the student actively connects stories to the theories at hand” (Suwardy et al. 2013, 3).

Since learning with digital storytelling is very interactive and requires students to participate actively throughout the project, the students are more engaged with their studies. The students do not just read about a topic and then write a report, instead they learn about a subject, examine it, discuss it with their peers, and then they work on it as a story. With this process, they have the opportunity to re-examine the topic at hand many times from a different perspective. In the dataset, the interactive nature of digital storytelling as an educational tool is evident. A data extraction from Article 9 is an example on how that



interactive nature results in students being more engaged with their studies than they would with a regular learning style.

“Digital storytelling allows students to develop their personal and academic voice, present knowledge to a community of learners and receive situated feedback from their peers. Due to their affective involvement with this process and the novelty effect of the medium, students are more engaged than in traditional assignments” (Ivala et al. 2013, 2).

Another data extraction from Article 9 demonstrates that a large component of students being more engaged with their studies has to do with peer interaction. Peer interactions such as learning from other students, working in teams, discussing with peers and receiving feedback from peers are often praised in the dataset as reasons behind students' willingness to engage more with their studies. This seems to be the case especially in digital storytelling projects where students work in groups:

“Furthermore, students indicated that their levels of engagement with their studies were enhanced by peer learning and increased student-lecturer interactions. Results showed that through the production of digital stories, students benefited immensely from the influence and expertise of peers” (Ivala et al. 2013, 5).

Teachers' experiences also supported the notion that digital storytelling as a learning tool increased students' engagement with their studies. However, in teachers' experiences the teamwork component of students' engagement with their studies does not come through as strongly as it does in the data extractions regarding student engagement. From teachers' perspective, students seemed to engage with their studies regardless of whether they worked in groups or individually, but even in individual projects the peer discussions were seen as very important.

By sharing their digital stories, the students share their experiences and build connections with each other. By connecting with one another, the students create a sense of community together. Community building was a particular theme in projects where students created digital stories individually. Surprisingly, the data indicates that the community building does not happen through teamwork, instead it happens through shared stories and experiences. A data extraction from article 13 provides an example of how digital storytelling can be used to build a sense of community. When students share common stories from their everyday life, others with similar experiences can relate to those stories or gain new perspective and that builds a sense of community between participants.

“As we share our individual stories of experience, we find connections with others. Together we co-construct the meanings that extend beyond our individual experiences and create a sense of community and group identity. Stories of common experience – e.g., the flood of 2007, growing up on a farm in the Midwest, serving the military in Iraq – build a sense of community among those who share that experience. Each story is different and unique, yet they bond us together in a community of shared experience” (Garcia & Rossiter 2010, 5-6).

Sense of community can also be gained when the shared stories of participants’ experiences are not familiar to others. Article 1 is a study about a digital storytelling project in Hong Kong about equality of civil society. A data extraction from that study demonstrates that even with politicized and polarized issues digital storytelling can provide a non-judgmental atmosphere and enable participants to empathize with others. A digital story told from a personal point of view can be a way to bring awareness to issues that may not be apparent to people with different life experiences and facilitate discussion about those issues.

“While ethnonational identity in Hong Kong was a politicized and polarized issue at the time of the study, this project provided a non-judgmental online social network that allowed for ambiguity. The online group maintained an atmosphere that emphasized openness and ambiguity. Participants therefore did not have a strong need to take a side, and most noted that they enjoyed the overall process” (Chen 2019, 7).

The dataset indicates that when students have more control of their studies, they gain more confidence. With digital storytelling, students are in control of their learning throughout the project, they get to make decisions on what kind of story they want to tell, which elements to use and from which perspective they want to tell it. At the end of it, they have something concrete to show about their learning. A data extraction from Article 2, where students learned English as a second language, shows another way in which digital storytelling increased self-confidence. Students get to practice their performance and choose which performance they want to show their peers. It decreases anxiety around performing in front of others.

“The students did not feel shy practicing speaking because they did not tell in front of the audience. They only faced their laptop. It increased their self-confidence” (Zuana 2018, 7).

Digital storytelling also allows students to use their voice and gives them the opportunity offer their perspective on an issue or a topic. According to a data extraction from Article

10, when students bring their own experiences and perspective to an issue or a topic, making the digital story their story, they feel more comfortable sharing it:

“Students who have some practical experience with a particular concept (e.g. supply chain management) were encouraged to use their prior experience to develop their digital stories. We observed that those students who had practical experience with a specific topic felt more comfortable presenting it to their peers” (Andrade et al. 2013, 3).

## 5.2 Learning Outcomes

This chapter addresses the effects digital storytelling has on learning outcomes. Learning outcomes as a theme had the most data extractions from the dataset. Overall, 95 data extractions were extracted from the dataset for further examination. Of those 95 data extractions 21 are about digital literacy, 13 about difficult concepts, 13 about problem solving and critical thinking, 29 about social skills, 7 about language, 7 about creativity and 5 about overall academic performance.

Digital literacy as a coherent theme is not widely covered as itself in the dataset other than in article 3. However, the aspects of digital literacy are present in the dataset in various articles. Improvement of digital literacy is not particularly apparent in the dataset (excluding Article 3), even though making digital stories requires digital literacy skills and students get to practice digital literacy in the process. A data extraction from Article 3 demonstrates how digital literacy skills are practised in the digital storytelling process. In order for students to make their digital story, they must analyse and use digital media, resulting in students learning digital literacy skills:

“Skills mastered in digital storytelling activities: Level I: Digital Competence: Collecting and analyzing digital media, Photo and video editing skills, Using camera, microphone and tripod, Voice over recording in a quiet place for better quality” (Chan et al. 2017, 13).

Article 3 noted that all students improved their digital literacy skills regardless of their prior knowledge. This notion is supported in the other articles. Students’ increased ability to use digital tools is mentioned separately in four articles. Increased ability to analyse and to produce digital media content is apparent throughout the dataset. In digital storytelling projects, for students to successfully produce their digital story they must understand how digital media works and how to communicate through it, which leads to increased digital literacy skills.

“The findings reveal that the students’ digital literacy has improved regardless of their prior knowledge in digital competence” (Chan et al. 2017, 1).

Digital storytelling can help students understand difficult concepts. The dataset indicates that this is because the students see difficult concepts in context and putting a difficult concept into a story shows the connection between a concept and actual practise. A data extraction from Article 2 points out that the whole process of making of digital stories helps students to see a particular concept in practical context, which clarifies the meaning:

“The digital storytelling process helps to transform isolated facts into illuminated, enduring understandings” (Zuana, 3).

An addition to showing the connection between concepts and actual practice, a data extraction from Article 8 demonstrates the fact that digital stories also have an element of entertainment, which makes learning difficult concepts or any concepts more enjoyable. The entertainment element and the fact that digital storytelling requires students to engage with their topic more deeply, in order for them to turn their experience into a story, ensures that the students have a comprehensive conception of their topic.

“Digital storytelling is an amalgamation of education and entertainment with an element of adventure. Thus, digital storytelling makes seemingly stand-alone technical topics more meaningful and easier to learn. As a result, it helps to overcome boredom and act as a hook to capture students’ interest in the subject matter” (Suwardy et al. 2013, 3).

Digital storytelling provides an opportunity for students to practise decision-making. Digital storytelling projects have many aspects that they have to manage. They have to write a script, they have to compose the visual and audio elements, they have to schedule it, they have to present it and depending on the circumstances they might also have to work in teams. That is a lot more elements to a project than writing a typical report. During a digital storytelling project, students have to solve various problems. Data extraction from Article 3 demonstrates various problems that have to be solved in a digital storytelling process and that students are able to manage that type of processes.

“He demonstrated good planning and commitment to overcoming the problems such as time constraints, camera equipment, and skill issues of his group members” (Chan et al. 2017, 11).

A data extraction from Article 8 is an example of how digital storytelling requires students to exercise critical thinking in their projects. In order for them to successfully solve problems, they have to consider the different consequences their decisions might have. Students have to consider what they want to achieve with their digital story and how they achieve that. That requires them to critically think what information is relevant for conveying their message and what is the best way to present their message. The process of producing a digital story as a whole is promoting critical thinking.

“We found that students were able to discover the factors contributing to the problems in the digital story and evaluate the consequences of different decisions” (Suardy et al. 2013, 7).

Improved social skills is another benefit of using digital storytelling in education. Communication skills are enhanced during a digital storytelling process. A data extraction from Article 5 shows that with digital storytelling, students learn to organize and present their ideas, they learn to listen to other peoples’ ideas, and they learn to construct narratives.

“Students who participate in the creation of digital stories develop enhanced communication skills by learning to organize their ideas, ask questions, express opinions, and construct narratives” (Robin 2016, 3).

Improved social skills are not an exclusive benefit of digital storytelling projects where students work in teams. Even if the students do not work in teams, sharing their final product gives them an opportunity to discuss it with their peers. A data extraction from Article 5 points out that giving and receiving feedback promotes social learning and social skills. If they work in teams, they obviously learn collaborative skills but they also gain emotional intelligence by interacting and making decisions with their team members. Peer learning in general is a strong element in digital storytelling.

“Students who have the opportunity to share their work with their peers may also gain valuable experience in critiquing their own and other students’ work, which can promote gains in emotional intelligence, collaboration and social learning” (Robin 2016, 3).

With digital storytelling, the students have the freedom to express themselves through digital media. The process of digital storytelling enables students to be creative in many ways: they get to write a story, create a storyboard, choose which media to use and how to present their story. A data extraction from Article 3 suggests that creative freedom in the digital storytelling process increases students’ creativity and self-expression. Students’

experiences (Chapter 5.4) indicate that the creativity aspect of digital storytelling was fun and increased their motivation and engagement with their studies.

“It was observed that the digital storytelling activities, including storyboard drawing, script writing, use of camera, video shooting, narration recording, video editing and sharing, can help the learners master the basic skills, concepts, and use of digital media. This suggests that through digital storytelling, students may develop their creativity and innovation in expressing their ideas with digital media” (Chan et al. 2017, 13).

Improvement in language skills is mostly covered in the dataset in relation to learning a foreign language, and in that context digital storytelling was reported as having been successful. In particular, students’ pronunciation skills improved when using digital storytelling in learning a foreign language. With digital storytelling, the students get to rehearse their speaking without any pressure of speaking in front of an audience and record it as many times they like. They also have a chance to listen to their own speaking and learn from that.

Digital storytelling supports language skills in other ways as well. A data extraction from Article 11 demonstrates how digital storytelling supports language skills. Language is a big part of storytelling in general and with digital storytelling the students practice language skills. They write a script, narrate the story (usually), communicate with others and often at the end students give and receive feedback. All those components support language skills.

“Seven respondents indicated that digital storytelling helps to improve students’ language skills. The answers in this theme include listening and speaking skills, narrative skills (both written and oral), and pronunciation skills for foreign language” (Yuksel et al. 2011, 4).

Academic performance is not mentioned in the dataset very often. However, improvement in research skills, writing skills, presentation skills and having a better understanding of the subject matter are mentioned throughout the dataset, which can be understood as referring to academic performance. A data extraction from Article 11 sums up the aspects learning that digital storytelling supports. Digital storytelling requires students to research the chosen topic, go through the information, rearrange it and present it, and all of these activities also support overall academic performance.

“Our findings suggest that digital storytelling supports student understanding of subject area knowledge, overall academic performance, as well as writing, technical, presentation, and research skills” (Yuksel et al. 2011, 7).

### **5.3 Implementation of Digital Storytelling into the Curriculum**

Nine out of ten articles had information on how to implement digital storytelling into the curriculum. 70 data extractions from the articles were related to implementing digital storytelling into the curriculum. The results are examined by comparing similarities and differences and by summarizing the main practices of digital storytelling projects present in the dataset.

#### **5.3.1 Outline**

The main resource mentioned in the dataset is teachers' knowledge of digital storytelling. Editing software and technological tools are also mentioned as a needed resource and the dataset does mention a few different editing software such as Photo story 3. In the dataset, three options for an editing process are specified, an option to install editing software, use a web-based editing tool or use an editing application suited for smartphones or tablet computers. A technical support requirement is also mentioned in Article 3. Technical support does not appear to be something that the students require, but it seems to be a need for the teachers.

Even though software and technical tools are mentioned in the dataset, the main emphasis is on teachers' capability to help students with their digital storytelling process in general. A data extraction from Article 3 points out that teachers might need additional training in digital storytelling. They must understand the digital storytelling process in order to guide the students with their digital storytelling projects.

“Third, professional training workshops on digital storytelling should be offered to teachers to get them familiar with digital storytelling activities. Teachers may need to give guidance and feedback to students” (Chan et al. 2017, 14).

Digital storytelling requires time and independent learning from the students. A data extraction from Article 2 is an example on how independent learning was present in the dataset. Many of the articles describe that students were taught and offered guidance in the classroom but the actual making of the digital story happened outside of the classroom. From the students' experiences, it appears that students enjoyed working on their projects outside of the classroom and did not find their digital storytelling project as invasive to their leisure time.

“Independent learning was promoted when students studied from the digital storytelling” (Zuana 2018, 8).

The dataset does not offer specific information about how much time is needed to complete a digital storytelling project. A data extraction from Article 9 is the only mention about the length of a digital storytelling project. Time requirements depend on the extent of the project. Sometimes digital stories are created based on one picture, which obviously takes much less time than creating a digital story with many pictures, video components or even special effects. Digital storytelling has different phases and each phase requires a different amount of time. The time used in the project should be proportioned to the expectations for the final product and the skill set of the participants.

“The project took eight weeks, commencing with students writing a script for their stories. After each student wrote drafts of the story, the facilitators provided constructive feedback on each draft, giving suggestions on how to shape the stories to not exceed the required word count of 500 words” (Ivala et al. 2013, 3).

The dataset indicates that time restrictions can be a challenge with digital storytelling projects. It seems that the time restrictions are a concern with teachers who were not familiar with digital storytelling activities or did not have the opportunity to maintain their digital storytelling skills.

### **5.3.2 Execution**

In the dataset, the steps varied on how to execute a digital storytelling project in the classroom. Different articles divided the steps differently. In this thesis, the steps are divided into five phases: example, planning, production, presentation and evaluation.

Students may not know what digital storytelling is and because of this they will benefit from seeing an example of a digital story. In the data extraction from Article 9, the example was made by the teacher. An example at the beginning of the project help students understand the genre and what they are expected to produce. It helps them understand the assessment criteria. The example video can be an inspiration to the students but according to the data, it should be different from the topic of the students' assignment. Teachers' experiences indicate that if the topic is too close to the example there is a change that the students will try to recreate the same story instead of creating their own.



“Before embarking on their own stories, students were shown a model story developed by their lecturer as they were not familiar with the digital story genre” (Ivala et al. 2013, 3).

The planning phase is emphasized in the dataset as a crucial part of the process. From the students’ perspective, if there were problems in the planning phase, it would affect negatively on the students’ whole experience. In the planning phase, the students decide on their theme and provide a script for their story. The data also indicates that the students enjoyed the freedom to choose their own theme. The planning phase is for the students to outline the project and divide their duties. In a data extraction from article 10, the plan was a way for the teacher to confirm that the students had understood a connection between a theory and real-life scenarios. A plan that is shown to the teacher also provides an opportunity to offer guidance and feedback to the students.

“Students submitted a project plan outlining the story plot that connects a chosen IS concept with practice and the production plan. The plans enabled us to provide feedback early on to ensure that the students were on track for completing the assignment” (Andrade et al. 2013, 6).

The production phase is where the data had the most variation between the research-articles. The main difference was whether the students were expected to film or photograph the content for their digital story or if they were expected to compose the digital story using existing photos from a database. A data extraction from Article 3 is an example of a bigger production with a post-production phase where the students could edit their content. In this type of productions, the emphasis is on improving technical skills and practising critical thinking and problem solving.

“They would make use of the skills such as the use of camera shots and angles with special effects to capture the scenes based on the storyboard to communicate with the audience in the production phase. Students might capture some of the shots or edit part of the video again for better quality in the post-production phase” (Chan et al. 2017, 13).

A data extraction from Article 9 represents an example of a smaller production. Digital storytelling projects with less extensive production phases are more adaptable to different agendas. The students are not expected to know how to film live action, instead they create the story using still pictures. The use of still pictures was common practice in the dataset used in this thesis. With a smaller production, the student could choose whether to use their own pictures or pictures from the internet, and the main emphasis was on the

narrated story. The pictures, texts and background music were used to support and strengthen the story.

“They then located, scanned or took digital photographs to accompany their words, found images on the Internet to enrich their stories, recorded background songs or downloaded songs from the Internet. They ended the process by bringing these multiple media together (using MS Movie Maker) to make a short (around 5 minutes long) powerful and personally meaningful digital stories that clearly and movingly spoke to the other members of the class” (Ivala et al. 2013, 3).

The presentation phase was very similar in all the research articles. The students show their final product to their peers and receive feedback. In this phase, the peer learning is an important component. The students have an opportunity to present their understanding of a topic but also see other points of view on it. A common place to present the final products is a classroom, but in article 15 the participants presented their digital stories on a social media platform. After the presentation, the topic and the story are discussed with peers, which is an opportunity for the students to reflect on their learning. A data extraction from Article 10 provides an example on how discussion can be encouraged by posing questions:

“The digital story presentation required student teams to show their digital stories and to pose two discussion questions to encourage other students in class to engage in the learning process” (Andrade et al. 2013, 6).

The last part of the execution is the evaluation phase. The assessment criteria depend on the objective of the assignment. If the aim is to understand a complex concept, the main emphasis of the evaluation can be on the content of the story. If the aim is to learn technical skills, the emphasis can be on the technical quality of the video. However, it is evident from the data that the assessment criteria have to be transparent to the students from the beginning. A data extraction from Article 10 brings up an excellent point that the evaluation has to be perceived as fair by the students. The students want to feel that the effort they put into the digital project is worth their time.

“It is important for instructors to design an assessment structure that students perceive as fair and to reward the effort put in completing the assignments. Digital storytelling projects, in part, should complement the course’s learning strategies” (Andrade et al. 2013, 16).

### 5.3.3 General Guidelines

The students can produce a digital story as a team or as an individual assignment. In the dataset, the digital stories that are produced as individual assignments are personal stories of the students who created the assignments. When digital stories are produced as team assignments, they are usually about a specific subject matter related to the students' studies. It is highlighted in the dataset that digital storytelling projects as team assignments are more beneficial to the students. A data extraction from Article 10 is an example of that. When students work in teams, they improve their social skills and get the most out of peer learning:

“A team-based approach was used for this project as it has been shown to improve learning outcomes in digital storytelling assignments” (Andrade et al. 2013, 15).

The dataset indicates that teachers' role in digital storytelling projects is to guide the students towards independent and peer learning. As mentioned in Chapter 5.1 digital storytelling projects are an interactive way of learning and the aim is that the students do not listen to typical lectures but engage with their subject matter. A data extraction from Article 13 is an example of how a teacher must provide enough information for the students to spark their interest and steer them in the right direction. This will help the students to discover the relevant information on their own. If the students are given all the information at hand, they have no incentives to engage more deeply with the subject matter. This requires teachers to give up some of the control of the learning process to the students. From the dataset, it is evident that the students need to trust the process and that help is available when needed.

“The role of the teacher is to bring the learner into interpretive relationship with the content. Too much information given by the teacher leaves no room for questions. Too little information leaves the learner with insufficient grounding for questioning and understanding. The interpretive space lies somewhere in between” (Article 10).

Even though the aim is for students to engage in independent and peer learning the teacher should provide guidance and feedback throughout the project. The importance of feedback is mentioned separately in four different articles. Especially peer feedback is mentioned as an instrumental part of students' reflection on their learning as seen in the data extraction from Article 10. The dataset indicates that feedback is a way for students to improve their work and further engage with the topic. It should be given in every phase of the project and not reserved to the end of the project.

“Individual reflections allowed students to think about their digital story creation experience and the stories produced by their peers in order to evaluate their learning benefits and challenges” (Andrade et al. 2013, 6).

Article 11 studied how digital storytelling is used around the world and in different contexts. The study was conducted as a survey. A data extraction from that Article 11 shows that digital storytelling can be used to teach many different subjects. Other data extractions from the dataset support that. The dataset did not have any indications that digital storytelling as a tool was insufficient to be used as a teaching method in some subjects are.

“The findings also suggest that digital storytelling can be used in multiple subject areas including language arts, social studies, the arts, and science. In addition, some respondents use digital storytelling in teaching for technology literacy (in Austria), healthcare education (in the United Kingdom), and communication (in Norway)” (Yuksel et al. 2011, 7).

A data extraction from Article 5 provided an interesting point of view how digital storytelling as a student project could be used to make educational material for the other students. With this type of projects, the students would still get to use their creativity and practise critical thinking, problem solving and social skills. At the end, the final products could be used in the education system as examples or as a starting point to facilitate discussion.

“In addition to having students create digital stories as a distinct stand-alone activity, students might also be encouraged to develop instructional materials that can be used to support the educational topics and themes of the digital stories they produce. These educational resources can include links to additional readings and websites, external media such as podcasts, interviews or other videos, quizzes, lesson plans, definitions, and other materials that can be used to make the digital story the starting point for further exploration” (Robin 2016, 6).

#### **5.4 Participants' Experiences**

65 data extractions were taken from the dataset with regard to participants experiences. 46 of them are students' experiences and 19 are teachers' experiences. Overall, students' and teachers' experiences with digital storytelling have been positive. Digital storytelling has supported students learning and the projects have been fun and engaging. In general, the data indicates that students have enjoyed working in teams and using technology in their studies, but there are a few instances where students have thought that working in

teams has restricted their learning and affected negatively their overall experience with digital storytelling projects.

Students see digital storytelling as a more interesting way of learning than regular lectures or textbooks. The data indicates that not only did the students enjoy learning through digital storytelling, but they also internalized topics or concepts better with using digital storytelling. In Article 8, the teacher used digital stories to show accounting scenarios in real life situations. The data shows how a student saw the benefits of digital storytelling even though the students were not excited about the digital stories at the beginning of the course. That type of student experience supports the claim that digital storytelling increases motivation and students' engagement with their studies.

"I think that MD2D is quite good, even though I complained of how the story is lame. It is so much easier to relate to accounting numbers when you put stories together with them" (Suwardy et al. 2013, 7).

In the same article it is expressed that digital storytelling resulted in better learning experiences and helped contextualize the theory students learned in the course. The students appreciated the teachers' effort to improve their learning by giving them an overall view on how they can utilize their insights in working life. The data also indicates that students hope to complete digital storytelling or similar projects in the future.

"The fact that Prof has used the MD2D movies to enhance our learning process is great and it helps us understand how the accounting processes and business actually work in the outside world and also helps to understand how the concepts we learned through the text can be applied in real life" (Suwardy et al. 2013, 7).

Students find that digital storytelling is an effective way to increase discussion in class and, as the literature about digital storytelling suggests, they feel that it offers new perspectives. The data extraction from article 8 below is an example on how students can see the benefits of the whole process of digital storytelling. The students see that it is not just about watching or creating videos but rather about examining issues from a different perspective and facilitating conversations about it:

"Furthermore, several pop-up discussion questions that served as starting points for discussion in each class were well-received by students. These students indicated that the follow-up discussions that are linked to the stories had encouraged them to re-examine the issues from a new perspective" (Suwardy et al. 2013, 7).

When the students create their own digital stories, they get to show how they have understood the subject and can offer their perspective on the matter. They see how others understand a topic and with seeing different perspectives on different topics, they can connect to one another. Connecting to one another and seeing other perspectives seems to be a contributing factor on how much the students enjoyed or benefited from the digital storytelling experience. A data extraction for Article 9 is an example of how a student learned from others and thought that this type of learning was beneficial:

“its [producing of digital stories] is very personalized. It comes from your perspective and then other people can relate to that...whereas when you write something [paper based assignment] it comes out very factual especially at this university level... people read something that you’ve written and they have a slightly different interpretation as you do in your head. Whereas this [digital story] you’ve got the images right there and you’ve got the words and the music. The tone is set. The mood is set and the pictures are there to show things from how you experience it and how you see it. So I think it’s much more affective actually” (Ivala et al. 2013, 5).

In general teamwork is seen as a positive thing. Students feel that digital storytelling projects encourage them to learn from each other and improve collaborative skills. A data extraction from Article 9 is an example of how students benefit from collaborative experiences. Each student brought something different to the team and together they decided who does what, which led to an enjoyable experience.

“Because like [student] C knew exactly what was going on with all the programming whereas with writing and stuff, I would be fine on my own. Just like [student] A, but without C my movie would have been very different and without sort of D saying this sounds good, that sounds bad, or you know we kind of, we bounced ideas off each other” (Ivala et al. 2013, 5).

Issues related to teamwork are covered in more detail in Chapter 5.5 Challenges, but issues with teamwork appear to be a major factor in the success of students experience with digital storytelling. Often students who had problems in their teams thought that the experience was not enjoyable and the quality of the story did not match their standards. The planning phase of a digital story seems to be a pivotal point for teamwork. Many of the negative experiences with teamwork are related to the difficulty of planning the project. There are four data extractions about teamwork related issues and all of them relate to planning. A data extraction from Article 10 shows a summary of this type of experiences.

“Some students reported that they did not feel that they got the most out of the project, or that they believed the quality of the story suffered because of issues related to teamwork and planning” (Andrade et al. 2013, 15).

Students’ experiences focus mostly on how they enjoyed the experience and benefited from teamwork but evidence on whether they felt that learning with digital storytelling resulted in better learning outcomes than learning with regular methods is not strong. The learning outcome aspect has not been examined from a student perspective, at least not in detail. A data extraction from Article 7, however, does show how the majority of the students in that case did feel that digital storytelling resulted in better learning outcomes. This might be difficult for students to evaluate themselves since they cannot learn the same thing twice with different methods. Data extraction also points out a valid point about generations who have grown up with modern technology, appreciating the opportunity to use technology in various ways:

“On the whole they described the experience as contributing to their improvement in ICT skills, language skills, collaborative learning skills and autonomous learning skills. This positive view could be attributed to the fact that this generation of students are very computer savvy and hence appreciate the opportunity to use technology whenever possible” (Thang et al. 2014, 4).

Overall, teachers who have used digital storytelling in their curriculum thought that it was beneficial to students. Especially collaborative skills are something that the teachers feel improve with digital storytelling projects. A data extraction from Article 7 gives an excellent example from teachers’ perspective on how students learn from each other and how that supports their learning:

“They learned how to cooperate, how to interact and there’s a give and take, you know, when one person cannot do this job for example so the others will try to help and so on and so forth” (Thang et al. 2014, 4).

Another thing that teachers feel is great about digital storytelling as a tool for teaching is that it is an interactive way of learning. The students are not just observing a lecture but are part of the learning. As mentioned also in students’ experiences, the teachers also think that digital storytelling facilitates conversations about the study subjects. A data extraction from Article 5 is an example of teachers’ perspective on a successful digital storytelling project and how it resulted in students taking control of their own learning:

“With one project, my students went from passive observers, learning what I told them to learn, to active participants, taking control of their learning. The transformation was incredible and worth every minute I spent on this project. This project turned out better than my wildest imagination. I have repeated this project and others like it and will continue to use technology to transform teaching and learning in my classroom” (Robin 2016, 4).

A data extraction from Article 7 presents an excellent point about digital storytelling providing students with something to show for. Students can be proud of their work. In addition to them learning new skills, they have something concrete to show for it. They can even use their own digital story when searching for jobs. It is an actual accomplishment that can be shared later on.

"They have something at the end. The output which they are all proud of. So that's a good example of experience. Because we are not just teaching them, we are giving them and they have nothing to show for if you just test them like what we are doing, like quizzes and final exam, they have nothing to take away except the grade. But this one they have something to take away" (Thang et al. 2014, 5).

Challenges with time were a concern with teachers. There were a few instances where teachers noted that digital storytelling was very time-consuming and a slight increase in learning outcomes may not be worth the time. This topic is covered in more detail in the next chapter.

## **5.5 Challenges with Digital Storytelling**

There were 27 data extractions from six different articles related to challenges with digital storytelling in education. The challenges were mostly related to inefficient tools or skills but also to poor teamwork and losing sight of the objective of the assignment. Digital storytelling projects are time-consuming and that raises questions whether the benefits are worth the time. Copyrights issues were also mentioned as a challenge.

It is possible that if the students do not have the technical skills to make a digital story, they feel restricted and that does not inspire creativity. Students' poor technical skills can be a challenge, depending on what a teacher wants to achieve with incorporating digital storytelling in their curriculum. If the aim is to teach technical skills, obviously poor skills are not a challenge and there is proper time to teach those skills. However, if the aim is to understand complicated concepts and students are expected to produce a digital story on their own, the varying level of skills between students is a challenge. In article 10 it is



brought up that technical skills or tools should not be an obstacle to the students' creativity. However, the students do not seem to share this notion. While examining the students' experiences in the dataset, poor technical skills do not appear to affect their experiences negatively.

“Quality of digital content can be a challenging balance for students who are not familiar with the technology. Therefore, it is essential that the technology tools themselves do not hinder students' creativity” (Andrade et al. 2013, 15).

Problems with the quality of the finished product are a challenge in some cases. A poor quality of sound or problems with sound arises in the dataset many times. In some cases, the students did not notice the problem with the sound until editing the digital story and that meant that they either had to shoot or record again or that they had to finish the project with a sound that was of a poor quality. From the data extractions, it appears that the sound quality or video resolution quality is not something that the students think about before putting the whole digital story together. In Article 3, there was an example of how a student thought that editing skills would be enough to make a quality video but learned that filming and recording parts are also important in order to make digital stories with a good quality.

“She hoped that the technical skills related to filming could be applied in the digital story because she believed that video editing skills could create an interesting and funny atmosphere. However, she found video quality such as sound quality and resolution captured for the first time was not good enough” (Chan et al. 2017, 7).

From a teacher perspective the ‘time versus gain’ point seems to be a concern. Extraction from Article 11 shows an expression from a teacher who thought that the time spent on digital stories is not in proportion with the outcomes.

“After the first year, I stopped doing this at all. The time used was enormous compared to disappointing results” (Yuksel et al. 2011, 7).

On Article 11 it was also noted that if digital storytelling is not a constant part of the curriculum, the required skills fade, and it takes additional effort to incorporate it again. If it is not incorporated into the curriculum and requires additional effort from the teachers, they might not find it appealing as a teaching tool. However, if they use it regularly and create their own routines for digital storytelling, it could save time and make the digital storytelling worth the time that is invested in it.

“I do not use DS regularly and find that I need to keep refreshing my skill set and other priorities overwhelm DS which is seen as a nice to do but not essential to do” (Yuksel et al. 2011, 7).

Teamwork is another challenge with using digital storytelling as an educational tool. Problems with teamwork includes problems with making decisions as a group, problems with finding time to work together and problems with planning the project. Poor teamwork experiences can affect students' opinions of the whole project negatively. A data extraction from article 10 indicates that problems with teamwork are a challenge for teachers as well, since they have to evaluate the project and that can be difficult without knowing who did what for the project.

“The most frequently reported issue that students faced when planning and producing their digital stories was poor cohesion within their teams. This is perhaps an inevitable problem with group assessments, as it is nearly impossible to police the inner workings of teams. However, one approach may be to get students to sign a group contract that requires teams to agree on team member conducts and responsibilities at the onset of the project” (Andrade et al. 2013, 17).

Digital storytelling as a tool requires planning. Making digital stories can be a fun activity but if the objectives are not clear, the project might end up being a time-consuming and inefficient as a teaching tool. As mentioned before in this chapter, the aim might be to learn technical skills or to learn difficult concepts, and if the aim is not clear from the beginning the objective can get lost in the process. A data extraction from Article 10 points out that it is important to remember the educational aspect when planning and executing a digital storytelling project. The process should match the skills of the participants but also the aim of the project.

“A potential risk that can undermine learning is that the experience of constructing the digital story overwhelms the concepts actually being taught. It is important that “the entertainment aspect of the system does not supersede the educational aspect”” (Andrade et al. 2013, 5).

Issues regarding copyrights are especially important if the plan is to publish the final digital stories on a public domain, on social media for example. A data extraction from Article 10 suggests that students might not know what materials can be used freely or where to find free materials. This relates to pictures, videos and audio materials. Copyright issues should be explained to the students if it is reasonable to assume that they do not know about copyright issues with digital media.

“Also, some stories used a large amount of copyrighted materials, which suggests that explicit explanation and instruction need to be given to students regarding copyright and plagiarism issues associated with the use of digital media” (Andrade et al. 2013, 17).

## 6 Discussion

This chapter includes discussion about the results, reliability and trustworthiness of this study as well as the researcher's reflection on the success of the research process. Further research recommendations are discussed as well. In this chapter, the researcher also evaluates her own learning and development during the process of this thesis.

### 6.1 Main Results

Digital storytelling is an interactive way of learning. Students do not just sit and listen, but they interact with the data and reorganizing it into a story requires them to understand the data completely. Using multimedia is a familiar way of communication for those who have been growing up in the information age and they welcome the opportunity to use multimedia tools with their learning. They discuss their story and the data behind it with their peers and teachers, offering them an opportunity to re-examine the data from a different perspective many times.

The interactive aspect of digital storytelling increases the students' motivation and social skills. When students engage with digital storytelling, they have more control over their own learning. They are not just passive listeners, but they actually organize their own learning. That freedom and the opportunity to show their final product give them more confidence. They also get an opportunity to share their perspective and have a sense of being heard.

Results show that opportunity to work with digital tools, peer learning and the interactive aspect of digital storytelling are the main reasons why digital storytelling increases students' engagement with their studies. Peer learning does not necessarily mean working in groups, as peer feedback and discussions alone also increased students' engagement with their studies. Peer interaction is a very important component in a successful digital storytelling project. The data shows that sharing one's story with peers builds a sense of community and offers new perspectives on issues. Surprisingly, the data shows that the sense of community was gained through sharing stories and not through working together. Sharing stories also offers a non-judgmental atmosphere where students can empathize with each other. It also facilitates discussion about the topic at hand.

Digital storytelling gives students the opportunity to practice many 21st century skills needed in the job market. The main skills digital storytelling supports are problem solving, critical thinking, digital literacy and social skills. The students also have the opportunity to be creative and they are given the freedom to express themselves.

Digital storytelling increases digital literacy by giving students the experience of producing digital media. For students to successfully produce their digital story, they must understand how digital media works and how to communicate through it, which leads to increased digital literacy skills.

Students get to practise project management skills along with critical thinking during the production of their digital story. They have to weigh in on many problems and make decisions between various options as well as cooperate with other people. They also have to schedule their project and manage the many elements of their digital storytelling project. This gives them practice with project management. When they practice decision-making, they get more comfortable making decisions and gain self-confidence. According to the data, the creative aspect of digital storytelling was received positively by students and they felt that it increased their motivation. It also gives the students a sense of being heard.

Social skills, particularly collaborative skills, are also practised in a digital storytelling project. Even if the digital story is not produced as a team assignment, peer learning is present in peer discussions and by giving and receiving peer feedback. As mentioned before, students get to see other perspectives and have an opportunity to look at an issue or a topic from multiple perspectives, which provides them with a more comprehensive understanding of the topic. With digital storytelling, students see the connection between a theory or a concept and real-life practice. They get more context for a particular concept and it clarifies the meaning of that concept. The entertainment aspect of digital storytelling also helps students to become motivated to focus on the concept.

The participants' experiences support the findings on the learning outcomes and the motivational aspects of storytelling. Peer learning, digital tools and independent learning are the main contributing factors on students' positive experience with digital storytelling. The dataset did not provide much information on students' academic performance from the students' perspective. However, students expressed that they enjoy digital storytelling as a learning tool and that they think that digital storytelling helps them understand difficult concepts better. Especially the connection between concept and practice is better contextualized with digital storytelling. The use of digital tools was seen as a good method of learning by the students. The data indicates that the students enjoy the process of producing a digital story. They especially enjoy the use of digital tools and the teamwork aspect.

In general, peer learning is well-received by students and they mostly enjoy the collaborative work. However, the data indicates that a minority of students think that teamwork is difficult and hinders the project. The planning phase of digital storytelling is a pivotal point for the teamwork. Many of the negative experiences with teamwork are about the difficulty with the planning phase of the project. Most students think that digital storytelling encourages peer learning and supports their learning. Students enjoy the discussions that are facilitated with digital storytelling and think that digital storytelling provides them with new perspectives.

Teachers' experiences also support the findings about learning outcomes and the motivational aspects about digital storytelling. Students' collaborative skills are something that teachers feel have been improved with digital storytelling. Teachers' experiences also support the notion that digital storytelling is an interactive way of learning. They see that with digital storytelling, students take more control of their learning and take an active part in learning. They also enjoy the discussions that digital storytelling inspires. Teachers see that students are proud of their work at the end of the course and have something to show for afterwards.

In the teachers' experiences, the "time versus gain" issue is apparent. Digital storytelling is time-consuming and there are some teachers who think that the small increase in the learning outcomes is not worth the time. It was also noted that if digital storytelling is not a constant part of the curriculum, the required skills fade and it takes additional effort to incorporate it again. This might not be appealing to the teachers. Planning was also mentioned as a challenge by the teachers. This is part of digital storytelling takes a lot of time and if not done properly, the aim of the project might get lost, resulting in wasted time.

When it comes to challenges with digital storytelling, the main issues are teamwork, technical skills and time. Teamwork is something that the teachers and students feel can be a challenge. Poor teamwork does not seem to be affecting the learning outcomes, instead it affects the students' opinion about the experience. However, students who experienced poor teamwork are a minority. Overall, it seems that teamwork and peer learning was seen positively by both students and teachers.

Technical skills are also mentioned as a challenge, especially if the students are expected to produce digital storytelling on their own outside of the classroom. The students, however, did not see poor technical skills as an obstacle. Instead, the students welcomed the opportunity to learn new technical skills. Problems with the sound or poor quality of sound

were the main problems with technical skills. The quality of sound was usually noticed in the editing part of the project and that required the students to either rerecord it or leave it as it is.

The main resource needed for implementing digital storytelling into the curriculum is teachers' knowledge of how to produce digital stories. Their role is to guide the students by offering them enough information to spark their interest but not enough for them to become passive listeners. The aim is to inspire them to engage in independent and peer learning.

Some editing software is also needed and the options for editing software are either to install software, use web-based software or to use an app intended for editing. Data in this research suggests that the teachers have a bigger need for technical support than the students. This is somewhat contrary to Ohler's (2013) view that teachers do not need advanced technical skills and that the students know how to use technological tools (Ohler 2013, 15). On the other hand, the teachers named technical support as a challenge, but the students did not. This might be because the teachers had learned the technical obstacles beforehand and could then give advice to the students or it could be that the students really did not need technical support and the teachers wanted more technical support for their own sake. However, the findings indicate that the students need support throughout the digital storytelling process in general, emphasizing the teachers' understanding of digital storytelling as a whole.

A teacher's support is important with using digital storytelling, but the whole process requires students to engage in independent learning. With feedback from the teacher and peers, the students have an opportunity to enhance their story and further engage with the topic. Often the actual making of a digital story happened outside of the classroom and required students to work on their project outside of classroom and on their free time. According to the students' experiences, this was not seen as an invasion of their leisure time.

The steps or phases to conduct a digital storytelling project are different in all the projects in the dataset of this research study. In this study, the phases are divided into five: providing examples, planning, production, presentation and evaluation. One thing that all the cases had in common was that an example was shown at the beginning to introduce students to digital storytelling as a genre. After the students understand what they are expected to do, they can start to outline their story.

The importance of the planning phase comes up in the students' experiences. Problems in the planning phase, especially in group assignments, affected the students' perception of the whole project. Often in the planning phase the students were expected to turn in their plan for the teacher to offer feedback and confirm that they are headed in the right direction. In some cases studied, the students preferred to choose their own theme. Usually, the planning phase included at least a script, but it can also include the students planning how they will divide their duties and organize their schedule. The results indicate that working in groups yielded a lot of benefits in digital storytelling projects.

The production phase was the most varied in the dataset. In most of the projects, the production started with recording the narrated voice and then pictures, video and other sounds were added to enrich the story. The researcher sees that the production phase depends on the aim of the project. If the aim is to teach technical skills, then the production can be bigger and the students can be expected to produce and edit their whole material on their own. If the emphasis is on comprehending a difficult concept or on the narrated story, the production can be smaller and the students can use existing pictures. To understand a difficult concept, the student will also need more time for background research.

The presentation phase is when the students present their final work and the digital story is then discussed in class. Here the students have another opportunity to engage in peer learning and reflect on their own learning. The students receive feedback from their peers. This activity also strengthens their digital literacy skills. Evaluating digital media in class helps them understand it better. Regarding the evaluation, the results indicate that the students must know the evaluation criteria from the beginning and they have to reflect the effort that is required from the students.

## **6.2 Reliability of the Research**

Validity and reliability are commonly used criteria to assess the quality of a quantitative research. In qualitative research, the assessment of quality is not as straightforward. A qualitative research approach might be criticized as the results of qualitative research cannot be measured by the same criteria used with quantitative research approaches. However, there are a variety of ways to assess the quality in qualitative research. There is also a need to analyse the data with qualitative research methods as quantitative research methods are not always suitable for the data and in view of the objective of a study. (Braun & Clarke 2006, 26-27.)



Since thematic analysis as a method is flexible, using systematic ways to analyse and present the findings is important. The researcher has to use a systematic method that delivers congruent results when applied to the data. (Braun & Clarke 2006, 27.) In this research, the main methods used to ensure the reliability of this research study are using peer-reviewed academic articles as data and being explicit and transparent in reporting the research methods.

Generalizability refers to the results' usefulness or relevance to a broader set of situations (Institute of Work and Health 2006). This study examines articles about different digital storytelling projects in different settings and in different countries, involving different types of people. In all the studies, the findings supported each other or were similar. Because of the variety of the digital storytelling projects covered in the research articles, the results of this study can be applied to different situations broadly, resulting in a good level of generalizability. However, while the dataset included articles from many countries and cultures, the research study only examined ten articles. To increase the generalizability, the study could be repeated with a larger dataset.

From the beginning of this research study, it was evident that in order for this research to be reliable, the examined data needs to be credible and academic in nature. For this reason, the researcher had specific criteria for choosing the articles that were included in the dataset. Using only peer reviewed academic articles increased the reliability and quality of this research study.

To further improve reliability, the methods used to collect and analyse the data are reported in detail and the decision of choosing content analysis and thematic analysis as the analysis methods are explained and justified relying on the theory of each method. Every step of the analysis relies on a known method and the theory of that method and the results are reported openly and without unfounded generalizations. In this study, the researcher has also used examples of the data in the report to demonstrate the relation between the data and the analysis.

### **6.3 Recommended Further Research**

Something that was discussed in this research study but would need further examination is whether the gain of using digital storytelling in education is worth the extra time that is needed to implement a digital storytelling project and whether digital storytelling can be integrated into the curriculum in such a way that it no longer requires extra time. In order to sufficiently study the time versus gain aspect, it might be a good idea to observe two sets of courses that teach the same subject, where one course uses digital storytelling

and the other uses traditional learning methods. To study whether digital storytelling can be integrated into the curriculum in a way that it no longer needs a lot of additional time requires an opportunity to observe or survey multiple teachers implementing digital storytelling projects in their class for a long period of time.

Another topic for further research is the use of digital storytelling in an online course setting. This study does not provide a sufficient answer to how well the methods of digital storytelling fit in an online course setting. Digital storytelling has the potential to be implemented in an online course setting but whether the benefits will be the same that they are in a physical class, could be further researched. It would be interesting to see how the community building aspect transfers to an online course and whether the challenges are the same.

#### **6.4 Reflections on Learning and Project Management**

The researcher is pleased with this research study. Conducting the study was educational and satisfying. The researcher reached her professional goals and the research study provided answers to the research questions. The only thing that could have been covered in more detail is digital storytelling in social activities. This research provided information on students engaging with their digital storytelling projects outside of the classroom but there was not as much information about digital storytelling in social activities as the researcher first thought.

During the research study, the researcher used professional and ethical procedures. The data collection and analysis were carried out using academically acknowledged qualitative research methods. By systematically going through academic literature, selecting academic research articles as the dataset, and following known research methods, the researcher wanted to ensure the professionalism of the study.

The researcher made minor changes to the research plan during the research study. Originally, the analysis was to be conducted using only content analysis. While the content analysis worked with the data collection phase, the thematic analysis was more sufficient for examining the themes in more detail and for understanding their relations to each other.

The thesis process as a whole deepened the researcher's understanding of digital storytelling and its benefits in educational settings. The researcher knew about digital storytelling in the social media setting but it was interesting to learn how it can be used to improve decision-making skills and project management skills and to build a sense of community.

The main insight the researcher gained in this process was the understanding of qualitative research methods. Reading about a vast variety of methods available to conduct a qualitative research was interesting but also challenging. In this research study, the researcher used content analysis and thematic analysis. Learning the difference between those two was fascinating.

There is still plenty to learn about the different methods, but the researcher now understands the need and reliability of qualitative research. Before the researcher was apprehensive about qualitative research, wondering how reliable or scientific the results can be. After writing this thesis, the researcher understands where qualitative research is required and how its reliability can be ensured. Some phenomena need a qualitative approach and cannot be studied by using quantitative methods. The whole process gave the researcher more appreciation for qualitative research and it also helped understand the criteria for quality and reliability in qualitative research.

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## Appendices

### Appendix 1. Researchers notes about the research-data articles

Article 1:

#### **Using digital storytelling to facilitate critical thinking disposition in youth civic engagement: A randomized control trial**

This article was from a different angle. It was not about digital storytelling in education but rather from civic engagement perspective. Information in this one was different from the other articles but supported the info from the other articles.

Article 2:

#### **Digital Storytelling: An Attractive Media to Teach Narrative Text in Speaking Class**

General info that supports the other articles. Challenges and experiences mentioned. Interesting information on learning outcome.

Article 3:

#### **Digital Literacy Learning In Higher Education Through Digital Storytelling Approach**

A lot of focus on learning outcomes and motivation. Interesting article. Study observations.

Article 4:

#### **Digital storytelling: New opportunities for humanities scholarship and pedagogy**

8 pages of what digital storytelling is. Lot of citations from other writers. Lot of might, could, may and such. I did not find this article useful.

Article 5:

#### **The Power of Digital Storytelling to Support Teaching and Learning**

Amazing! A step-by-step guide on how to make digital stories and how to evaluate them. Very specific descriptions on how digital storytelling has been beneficial. Specific software mentioned. Museum example!

Article 6:

#### **Integrate Digital Storytelling in Education**

Article was very short. The information in the article was very similar with the other articles. Lot of citations from other writers.

Article 7:



**Enhancing 21st Century Learning Skills Via Digital Storytelling: Voices of Malaysian Teachers and Undergraduates**

Short article but provided new information. Great teacher experiences and insight. Learning outcomes explained in detail.

Article 8:

**Using Digital Storytelling to Engage Student Learning.**

Very interesting article. Article was about how digital stories can help students to learn complex things. Not about how to teach digital story telling. Benefits and motivation well explained. No challenges mentioned though.

Article 9:

**Enhancing Student Engagement with Their Studies: A Digital Storytelling Approach**

Good article. Great staff and student comments. Lot about student engagement. Student engagement outside of the classroom mentioned.

Article 10:

**Engaging Students: Digital Storytelling in Information Systems Learning**

I found this article very useful. Lot of description on student engagement and from a different angle than on the other articles. Different challenges mentioned. Student experiences

Article 11:

**Educational Uses of Digital Storytelling all around the World**

Very good article. Lots of challenges mentioned. Worldwide info on how digital stories is used. What skills digital storytelling improves.

Article 12:

**The Pedagogy of Digital Storytelling in the College Classroom**

Short article. Culture and identity were big themes in this article. Some implementation points but not much else.

Article 13:

**Digital Storytelling as Narrative Pedagogy**

Not many points in this article but the ones I did find were different from the other articles. There was much about pedagogy.

Article 14:

**Digital Storytelling as web passport to success in the 21st Century**

Very few points in this article and they were not unique. Culture and identity mentioned.

Article 15:

**Developing A Framework for Advancing E-Learning through Digital Storytelling**

This article was not interesting. Step by step guide on how to build any story. Nothing new or different.