The Power of Digital Storytelling
to Support Teaching and Learning

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Abstract

Although the term "digital storytelling" may not be familiar to all readers, over the last twenty years, an increasing number of educators, students and others around the world have created short movies by combining computer-based images, text, recorded audio narration, video clips and music in order to present information on various topics. For more than twelve years, faculty members and graduate students in the Learning, Design and Technology Program at the University of Houston College of Education have been exploring the use of digital storytelling to support both teaching and learning. In 2004, the author established the Educational Uses of Digital Storytelling website (http://digitalstorytelling.coe.uh.edu) to serve as a helpful resource for those interested in learning how digital storytelling could be integrated into a variety of educational activities. This paper presents an overview of how digital storytelling has and continues to be used to support teaching and learning activities. In addition, recommendations and guidelines are presented for educators who would like to teach students to use digital storytelling as an educational endeavor.

Keywords

Digital Storytelling, Educational Technology, Teaching, Learning, Multimedia

I. Introduction

This paper deals with the educational uses of digital storytelling and presents an overview of how digital storytelling has and continues to be used to support teaching and learning. The first section begins with a definition of what digital storytelling is and how it differs from other types of videos found online. The next section focuses on how digital storytelling is being used to support teaching and learning in education, as well as in other areas such as museums, community organizations and healthcare institutions. Next, guidelines are presented that novice digital storytellers can follow if they wish to use this technology practice. The paper concludes with a description of additional resources that are available for those who want to learn more about digital storytelling.

What Is Digital Storytelling?

Digital storytelling combines the art of telling stories with a mixture of digital media, including text, pictures, recorded audio narration, music and video. These multimedia elements are blended together using computer software, to tell a story that usually revolves around a specific theme or topic and often contains a particular point of view. Most digital stories are relatively, short with a length of between 2 and 10 minutes, and are saved in a digital format that can be viewed on a computer or other device capable of playing video files. In addition, digital stories are typically uploaded to the interent where they may be viewed through any popular web browser. There are many different types of digital stories, but the author has proposed classifying the major types into the following three categories: 1) personal narratives - stories that contain accounts of significant incidents in one's life; 2) historical documentaries – stories that examine dramatic events that help us understand the past, and 3) stories that inform or instruct the viewer on a particular concept or practice (ROBIN, 2006).

Digital storytelling has steadily grown in popularity and is currently being practiced in a myriad of locations, including schools, libraries, community centers, museums, medical and nursing schools, businesses and more. In educational settings, teachers and students from kindergarten through graduate school are creating digital stories on every topic imaginable, from art to zoology, and numerous content areas in between. Digital storytelling has also become a worldwide phenomenon, with practitioners from across the globe creating digital stories to integrate technology into the classroom, support language learning, facilitate discussion, increase social presence, and more (Co-Authors & Author, 2011).

How Digital Stories Differ from other Types of Videos

In today's online environment, the lines between what is and what is not a digital story have become blurred as more videos are shared online. In our experience teaching digital storytelling, many students are confused when asked to define what a digital story is as well as discuss the most important elements of a digital story. In an educational setting, it is reasonable to ask questions of a video to help determine if it might be classified as a digital story. Some of the questions that should be asked when viewing a video include:

- What is the topic and the main purpose of the video?
- Where was the video found?
- Who created it and when was it created?
- Who is the intended audience?
- Did the creator of the video narrate it?
- Does it contain a personal point of view?
- Does the content seem to be factual and presented in a fair and balanced manner?
- Does the video seem to have a specific agenda or message that is related to an institution, business, or other type of organization?
- How long is the video?

On her Langwitches blog (http://langwitches.org/blog/), Silvia Rosenthal Tolisano (2015) discusses what she believes digital storytelling is and what it is not. She writes that digital storytelling:

- is NOT about the tools… but IS about the skills…

- is NOT about creating media, but IS about creating meaning…
- is NOT only about telling a story, but IS about contributing and collaborating…
- is NOT about telling an isolated story... but IS about sharing and connecting…
- is NOT only about the transfer of knowledge... but IS about the amplification…
- is NOT about substituting analog stories... but IS about transforming stories.

Much has been written regarding the personal nature of digital stories and that this personal, and often emotional viewpoint is an essential element of digital storytelling, as expressed through a first person narrative that includes a particular and personal point of view (e.g., see Lambert, 2002: Kajder, 2004; Ballast, 2007). Typical of this area of thought is Ohler's (2005/2006) observation that "through creating electronic personal narratives, students become active creators, rather than passive consumers, of media" (p. 44), so that the digital storyteller is empowered with the ability to communicate using various multimedia techniques.

Boase (2008) explores this topic through a slightly different lens, noting that students often find it difficult to tell their stories in a personal manner for a variety of reasons, including challenges in organizing and writing as well as cultural barriers to sharing personal experiences. She goes on to question the validity of digital stories about non-personal topics, such as those related to content-based subjects explored in the classroom.

Although, there may be different opinions on what constitutes a digital story, the term "everyone has a story to tell" is repeatedly found in the literature on digital storytelling (Behmer, Schmidt, & Schmidt, 2006; Landry & Guzdial, 2006; Xu, Park, & Baek, 2011) and this notion supports the concept that people tell stories based on their life experiences using different lines of narrative that reflect their culture, ethnicity, history, place in society, education and more (Nguyen, 2011). In this paper, digital stories are defined as short personal stories created with digital technology tools that are then are shared with others in order to present information, ideas and opinions on a range of topics and themes.

II. How Digital Storytelling Supports Student Learning

Digital Storytelling can be a powerful educational tool for students at all ages and grade levels who are tasked with creating their own stories. This use of digital storytelling capitalizes on the creative talents of students as they begin to research and tell stories of their own, learn to use the library and the internet to research rich, deep content while analyzing and synthesizing a wide range of information and opinions. In addition, 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. 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.

a. Digital Storytelling as an Instructional Tool in Early Childhood Education

In addition to asking students to watch digital stories created by others, digital storytelling can also be used to empower younger students when they use computer technology and multimedia resources to create their own stories that demonstrate their knowledge and understanding of educational themes and concepts. Young people today are becoming more technologically savvy and they are increasingly engaged by activities that take place on a computer screen. Even very young students respond to and are motivated by creating computer-based materials, such as digital stories, that allow them to demonstrate their knowledge of the topics they are exploring in the classroom. One of the most important aspects of digital storytelling is that it can help make learning more relevant for students. Digital storytelling can encourage creativity as well as give students a voice as they use their stories to share their ideas and feelings with others.
A particular strength of the digital storytelling process is that it can be used to facilitate writing through scripts and storyboards and promote student engagement and reflection. Shelby-Caffey, Úbéda, and Jenkins (2014) describe a digital storytelling project that was used to teach fifth-grade students about literary elements and literacy and the story writing process. These younger students first participated in a shared reading of a novel and then used the digital storytelling

process to create a movie based on that novel. One of the researchers who facilitated the project described the results this way:

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. (p. 199)

Foley's doctoral research study (2013) investigated a series of questions related to the use of digital storytelling in primary grade classrooms, including: "How might digital storytelling influence primary grade students' perceptions of themselves as writers?" (Research Question 4, p. 55). Foley's results showed that first and second grade students who participated in digital storytelling began to perceive themselves as more competent writers, were motivated to work on and complete their stories, and felt empowered by using computers to enhance their stories with multimedia. In addition, some students were able to use the digital storytelling assignment to tap into other creative talents such as creating their own visual images, taking photographs for their stories and adding colors, transitions and recorded narration.

The co-authors and the author corroborated Foely's findings in a research study (2014) that investigated the benefits and challenges resulting from a group of pre-school teachers who worked with even younger kindergarten-age students to create digital stories. Using a guided practice model, these teachers helped very young students complete a variety of tasks that included selecting appropriate story topics, discussing story elements, creating artwork and collaboratively developing the final digital stories. The teachers in this study reported that students who participated in a digital storytelling activity behaved better in class, had an increase in self-confidence and displayed greater interest in the subjects they were learning.

b. Digital Storytelling as an Instructional Tool in in Secondary and Post-Secondary Education

For older students, digital storytelling is particularly well suited to the constructivist classroom where these students are able to construct their own meaning through the multi-faceted experience of selecting a story topic, conducting research on the topic, writing a script, collecting images, recording audio narration and using computer-based tools to construct the final story. The result is a multimedia artifact that richly illustrates not only what the student has researched and brought to life, but also what they have learned from the experience.

Benmayor (2008) believes that digital storytelling empowers students in a variety of ways, including intellectually, culturally and creatively. After they have designed and created a digital story, new insights are gained through this summative assignment.

> I ask students to engage in an intellectual reflection that theorizes the story and the process of making it. They are asked to examine how their story (both the narrative and visual texts) fits into larger concepts, theories and cultural logics we read in the class, and to explain what understanding or insight they draw about their own identities and lives. (p. 190)

Gregori-Signs (2014) contends that digital storytelling allows students to "evaluate the reality that surrounds them and produce their own interpretation of it. This certainly contributes to the acquisition of knowledge-based skills and interaction with the physical world; social and citizen skills, and cultural skills" (p. 247). In their research, Smeda, Dakich and Sharda (2014) found that digital storytelling's ability to personalize students' learning experiences supported student diversity, improved students' confidence and enhanced their social and psychological skills.

In his search to identify the best way to engage undergraduate and graduate students, Berk's (2009) research identified a set of 20 characteristics of the "net generation" – those students who grew up within a digital culture, and have continuous access to a wide variety of technologies. He then addresses how educators can tailor their teaching strategies to match the characteristics of

these learners. In Table 1, more than half of the identified learner characteristics are shown in the first column followed in the second column by suggested teaching strategies that could be used to complement these learning styles. The third column contains this author's opinion of how digital storytelling supports these learner characteristics and corresponding teach strategies.

Learner Characteristic	Teaching Strategy	How Digital Storytelling Supports This
Technology savvy	Incorporate technology meaningfully into class activities and assignments.	Digital stories can be used as class activities and/or class assignments.
Relies on search engines for information	Provide assignments that allow students to use search engines, but also critically assess the information they find.	Search engines can be used to research digital story topics, locate images, music, video clips that can be included in the story.
Interested in multimedia	Include music, videos, and other media in assignments.	Digital stories contain a mix of music, video clips and other media.
Creates internet content	Allow students to contribute to websites, blogs, wikis, and create YouTube videos.	Digital stories can be uploaded to blogs, wikis, and other websites, including YouTube.
Learns by inductive discovery	Provide opportunities for students to be kinesthetic, experiential, hands-on learners.	Creating a digital story is a hands-on, experiential process.
Learns by trial and error	Allow students to test their own strategies for solving problems and take control of their own learning.	Digital storytelling allows students to solve problems and take control of their own learning.
Short attention span	Let students use technology to move at their own pace.	Digital storytelling lets students use technology at their own pace.
Communicates visually	Allow students to use images, videos and other visual representations in assignments.	Digital stories contain a mix of images, video clips and other visual representations.
Emotionally open	Encourage personal interaction and opinion sharing.	Many of the most powerful digital stories include a personal point of view.
Feels pressure to succeed	Tap students' multiple intelligences and emphasize deep learning experiences and critical thinking.	Creating a digital story allows students to be creative and critically reflect on what they have learned.
Constantly seeks feedback	Provide opportunities for both positive and negative constructive feedback.	Incorporating peer feedback in the digital storytelling process gives students an opportunity to improve their work.

Table 1. How Digital Storytelling Supports Learner Characteristics and Teaching Strategies
Source: Compiled by author

This author has written (ROBIN, 2008) that when students are able to create their own digital stories, they gain valuable skills and literacies designated by the Partnership for 21st Century Skills (2004). These literacies are shown in Table 2.

Digital literacy	The ability to communicate with an ever-expanding community to discuss issues, gather information, and seek help.
Global literacy	The capacity to read, interpret, respond, and contextualize messages from a global perspective.
Technology literacy	The ability to use computers and other technology to improve learning, productivity, and performance.
Visual literacy	The ability to understand, produce, and communicate through visual images.
Information literacy	The ability to find, evaluate, and synthesize information.

Table 2. 21st Century Skills and Literacies
Source: Compiled by author

Garcia and Rossiter (2010) suggest adding to this list three other learning outcomes that result when students share digital stories they create. They feel that these additional outcomes shown in Table 3 are important for today's learners who will become "tomorrow's citizens" (p. 1095).

Empathy and perspective-taking	Shared digital stories allow viewers to share the experiences of the storyteller and enlarge their own perspectives.
Self-understanding	Shared digital stories invite self-reflection and allow the storytellers to see themselves in new ways.
Community-building	Shared digital stories facilitate connections with others and through shared experiences.

Table 3. Garcia and Rossiter's Learning Outcomes the Result from Sharing Digital Stories
Source: Compiled by author

Digital storytelling can also be used in secondary and post-secondary classrooms as a means of combining content area knowledge with social awareness. In their work with college-level visual anthropology students, Fletcher and Cambre (2009) use digital storytelling assignments that allow students to create visual narratives that tap into their intellectual and creative abilities to present their understanding of the course material, as well as their sense of the social complexities in which they reside. They have found that digital storytelling can be a powerful classroom practice when used "as a pedagogical tool (that) brings the creator/student and the viewer together in a dialogue around the nature of representation, meaning, and authority embedded in imagery and narrative" (p. 115).

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. Under the direction of the instructor, students might work collaboratively in pairs, small groups, or as a whole-class in the design and development of such supplemental educational materials. An example of a digital story that includes these types of educational materials may be viewed online at: http://digitalstorytelling.coe.uh.edu/view_story.cfm?vid=397&categoryid=16&d_title=History

III. Digital Storytelling in Other Areas

a. Museums and Other Community Organizations

Museums, including ones that focus on art, science and cultural heritage, are finding that digital storytelling can be an effective method to capture the attention of visitors who have numerous alternatives for leisure activities that can both entertain and instruct. Ioannidis et al. (2013) provide examples of how digital storytelling is being used in museums to provide information about items in exhibitions, answering questions about the exhibits, as well as engaging museum visitors of different age groups, cultural backgrounds, and expertise in the subjects being presented. Museums are finding that the use of digital storytelling to support exhibitions and artworks can also lead to other innovative uses of technology, such as mobile devices and augmented reality, to extend the museum visitor experience.

Community and non-profit organizations can also use digital storytelling as an effective way to engage audiences and gain support for their causes. Because digital stories can be shared online, they can help community organizations advance their missions by effectively engaging larger audiences. Emotionally powerful digital stories can be used to raise awareness, motivate and inspire viewers, provide opportunities to focus on key problems and potential solutions and contribute to public dialogue (Rockefeller Foundation, 2014).

Iseke and Moore (2011) describe another type of community in which digital storytelling is being practiced: by indigenous groups of elders and youth. A collaborative project between young people and elders in indigenous communities focuses on blending modern technology with traditional oral

storytelling to create digital versions of stories that had previously been handed down to selected individuals within the community. This type of digital storytelling, "created by and for indigenous communities, addresses change, reflects community knowledge and perspectives, and enables negotiation of the community's social priorities. It creates opportunities to understand political activism and reflects the cultural mandates of communities" (p. 32). This is but one of many examples of this type of digital storytelling that can be found through online searching.

b. Health Sciences

In health sciences, digital storytelling can be a tool for patients, families and health science professionals to share experiences, cope with illnesses, and add a human element to health serious problems. For example, community digital storytelling workshops can be used to empower survivors to create digital stories that reflect on their health conditions as well as provide authentic ways for others to learn how to cope with various diseases. Hardy and Sumner (2014), detail descriptions of patients creating digital stories on living with health condition such as arthritis, the personal impact of chronic obstructive pulmonary disease (COPD), the therapeutic nature of digital stories as a healing tool for patients with mental health conditions, and patients and caregivers co-producing digital stories that depict the difficulties of living with early-stage dementia. In addition, their book provides examples of how digital stories can be used as data in both qualitative and quantitative research, as well as the focus of team building and professional development in healthcare settings. Numerous other health-related projects, such as those shown in Table 4, may be found online that demonstrate how patients and family members are sharing digital stories on a wide variety of health conditions and diseases.

Finding Our Way	http://www.mhima.org.au/finding-our-way
Health Equity Change Makers	http://www.minorityhealth.hhs.gov/changemakers/
Nurstory	http://milehighstories.com/?page_id=21
Patient Voices	http://www.patientvoices.org.uk
San Mateo County Health System	http://www.smchealth.org/bhrs/ode/stories

Table 4. Health-Related Digital Storytelling Projects
Source: Compiled by author

IV. Digital Storytelling Guidelines for Educators

For educators who would like to begin teaching digital storytelling, a 12-step process that students can follow is presented in Table 5.

Step 1: **Choose a Topic**	Begin by thinking of the purpose of the story. Are you trying to inform, convince, provoke, question? Who is the audience?
Step 2: **Conduct Research on the Topic**	You can use online search engines, but don't forget that the library can also be a useful research tool.
Step 3: **Write the First Draft of the Script**	This will serve as the audio narration for your story. Read aloud what you have written. Make sure that the purpose of the story is clearly articulated and includes an identifiable point of view.
Script Writing Tip 1: *Keep Your Script Small and Focused*	*You are writing a script for a digital story which is typically only a few minutes long. Focusing on a specific problem or topic will help you create a better digital story.*
Script Writing Tip 2: *Make it Personal*	*Your digital story is unique. It is your story, and the audience will want to hear it from your perspective. You may even need to reveal personal details in the story to reach an emotional depth, although it is up to you to decide what details you wish to share with others.*
Script Writing Tip 3: *Understand the Story Arc*	*Most stories consist of three parts: a beginning, middle, and end. The beginning is where you set the scene and begin the plot. The middle is where you provide more details about the topic or problem you are trying to explain. The story should be building towards a climax or resolution. The end is where the questions are resolved. Will new knowledge make you stronger? Will you now be able to accomplish greater things? What happens next in your life? These questions will be answered and new insight will be revealed. The conclusion of your story should connect back to the beginning to form a thematic arc.*

Step 4: **Receive Feedback on the Script**	Share your script with others and ask them to give you feedback on what they thought might make your story clearer or more useful.
Step 5: **Revise the Script**	Use the feedback you received to improve the next version of your script. Script writing is an iterative process and it takes several attempts to get good results.
Step 6: **Find, Create and Add Images**	Use an online search tool specifically for images, such as Google Image Search. You can search for photographs, drawings, clip art, maps, charts, and more. Don't forget that you can use photos you take yourself with a digital camera.
Step 7: **Respect Copyrights**	Look for material that is in the public domain or has a Creative Commons license.
Step 8: **Create a Storyboard**	The storyboard is a written or a graphical overview of all of the elements you plan to include in the digital story. It serves as a blueprint or an advanced organizer as you plan to construct your digital story. Storyboards can help you visualize your story before it is created when it is easier to make changes or add new content.
Step 9: **Record Audio Narration**	Try to use a high-quality microphone or a voice recording app on a smartphone.
Step 10: **Add Background Music (optional)**	Music that is appropriate to the theme of the story can add richness by complementing the narration. There are many great sites online, such as Jamendo.com that provide copyright-free music at no cost.
Step 11: **Build the Digital Story**	Select the software tool you will use to create your digital story.
Step 12: **Publish the Digital Story**	Share your digital story online at locations such as YouTube, Google Drive, Microsoft OneDrive, Dropbox, etc.

Table 5. A 12-Step Process for Digital Storytelling
Source: Compiled by author

Several authors and educators and have proposed their own version of the digital storytelling process (e.g., see Jakes & Brennan, 2005; Lambert, 2007; Morra, 2013; Ohler, 2008) and many common elements may be found in each one.

Analysis Phase: Educators help students identify an instructional goal and analyze aspects of the digital story related to the topic and script, as well as consider the potential audience for the story.
Distinguish the characteristics of an educational digital story.
Analyze the audience and develop the digital story script accordingly.
Choose an interesting topic and add a personal connection
Design Phase: Educators help students complete the script and storyboard for the design of the story as well as collect and organize appropriate media such as images, audio and video.
Recognize the importance of a detailed script.
Create a detailed storyboard before work on the actual creation begins.
Organize all of the digital story materials.
Use visually interesting images that support and strengthen the story.
Be inventive in creating useful images.
Use the highest quality images available.
Address issues of copyright and fair use.
Development Phase: Educators help students use technology hardware and software to build the story.
Record high quality audio.
Use text to add meaningful titles and credits.
Be thoughtful about the use of additional multimedia elements.
Use appropriate file names for images and other media.
Edit a copy of the file, rather than the original file.
Save files early and often–and in more than one location.
Save the final version of the digital story in multiple formats.
Implementation Phase: Educators help students plan how the story will be used and create additional resources including lesson plans, handouts, and other supporting materials.
Develop educational materials to supplement the digital story.

Evaluation Phase: Educators use a variety of measures to determine if the students achieved the goal for the digital story project or need to revise the story and supplemental materials based on this input.
Provide useful and supportive feedback to others' scripts in the design phase and drafts in the development phase.
Involve students in evaluation throughout the entire process.

Table 6. Digital Storytelling Guidelines for Educators Based on the ADDIE Design Model
Source: Compiled by author

For those just starting to explore the practice of digital storytelling, asking students to create a simple digital story based on a single picture or photograph can be a productive starting point. In an example the author uses with his own students, an old family photograph taken in the 1920s was the basis for a single-image digital story. First, a script was written about the people who appear in the photograph as well as details that can be observed. Next, online search tools were used to investigate different items seen in the photo. This research led to deep explorations in subjects such as history, economics, geography, advertising, immigration, entertainment and culture. In a classroom setting, students would be encouraged to locate old family photographs that could be used as in their own single-image digital stories. More information about single image digital stories and examples may be found online at:
http://digitalstorytelling.coe.uh.edu/example_stories.cfm?categoryid=22

To further assist educators who wish to teach digital storytelling, a set of guidelines are presented, based on lessons learned at the University of Houston (Author, 2012). These guidelines are categorized within the instructional design framework known as ADDIE, an acronym that stands for Analysis, Design, Develop, Implement and Evaluate. Since its development in the mid-1970s (Clark, 2011), this five-step process has been widely used in business and education (Molenda, 2003). Each of the five steps in the ADDIE model clearly defines the tasks that are to be completed (Cennamo & Kalk, 2005). A modified version of the guidelines that educators can follow with their own students is shown in Table 6.

V. Digital Storytelling Software for Educators and Students

There are three major categories of software and technology tools that can be used in the creation of digital stories: software programs that can be installed on a desktop or laptop computer, software that can be used through a web-based interface and applications that run on smartphones and tablet computers.

a. Commercial Software

The software that comes pre-installed on many desktop or laptop computers may be a good choice for those just starting out with digital storytelling. Windows Movie Maker for Windows and Apple iMovie for Mac are both extremely popular and relatively easy to use. Other software options for desktop and laptop computers include Adobe Premiere Elements and even Microsoft PowerPoint. Numerous tutorials and how-to guides are available on the web that demonstrate how to use these tools.

b. Cross-Platform Open Source Software

In addition to commercial software, open-source options that can be used to assemble and edit digital stories are available for free for Windows, OSX and Linux-based operating systems. Two of the most promising software applications in this category are OpenShot and Shotcut. OpenShot (downloadable from: http://www.openshot.org/) is a timeline-based video editor that incorporates multiple track editing and offers basic features such as fades, transitions and audio editing. Shotcut (downloadable from: https://www.shotcutapp.com/) is similar to OpenShot, but appears less polished and more of a work in progress. Shotcut includes many of the usual editing features including a multitrack timeline, cross-fading, transitions and filters, but lacks some of the commonly expected simple and intuitive options such as easily resizable windows, non-confusing icons, and functions that are not buried deep in menus, making them difficult to find. The benefits of open source software such as OpenShot and Shotcut, beyond the fact that they are available for

free, is that they are usually created by one or more enthusiastic software developers who continuously strive to make improvements, often based on user feedback. For digital storytellers on a budget or those who like to experiment with new software options, these may be worth investigating.

c. Web-Based Software

Although there are a number of web-based tools that can be used to create digital stories, WeVideo (https://www.wevideo.com/) is one of the most popular video editing programs that can be used through a web browser. Launched in 2011, each new version of the WeVideo interface adds features that bring it closer to desktop versions of video editing software. It is an excellent choice for schools that use computers running different operating systems (such as Windows and Macintosh) since it works identically on both platforms through any popular web browser. WeVideo includes a series of lessons and tutorials called WeVideo Academy, which is online at: https://www.wevideo.com/academy

A number of other web-based tools that can be used for digital storytelling are available, many at no cost. An excellent website that describes many of these options may be viewed at: https://50ways.wikispaces.com/

d. Mobile Tools

With the growing popularity and affordability of smartphones and tablet computers, an increasing number of apps are now available that can be used to create digital stories. Some of these tools, such as iMovie for iPhone, iPad and iPod Touch, are from well-known technology companies. Other less well-known apps, such as Storyrobe for Apple's iOS and Com-Phone Story Maker for Google's Android mobile operating system are reasonably priced, or even free. Information about these and other mobile apps may be found online at: http://digitalstorytelling.coe.uh.edu/listpage2.cfm?id=22&cid=22&sublinkid=87

VI. Learning More about Digital Storytelling

For those who wish to integrate digital storytelling into their teaching and learning, we recommend that they first explore the digital storytelling process and then learn how to use specific hardware and software tools to create a digital story. Educators may then wish to pass this knowledge along to students through activities, such as class assignments or for extra credit. The Educational Uses of Digital Storytelling website (http://digitalstorytelling.coe.uh.edu) serves as a comprehensive clearinghouse of information for those just starting to use digital storytelling as well as for educators, graduate students and researchers who want to explore the many facets of this educational technology practice. The site contains example digital stories, tutorials, links to e-books, websites, articles and research studies.

Digital Storytelling MOOC (Massive Open Online Course)

Another way to learn more about the digital storytelling process is by participating in a Massive Open Online Course or MOOC (Daniel, 2012). *Powerful Tools for Teaching and Learning: Digital Storytelling* is a five-week MOOC created by the author and graduate students at the University of Houston. It is offered on the Coursera platform either for free or at a relatively low cost (https://www.coursera.org/course/digitalstorytelling). This online course presents an introduction to digital storytelling and explores ways that this technology tool can be used to enhance the learning experience. The MOOC provides a solid foundation in the basic components of digital storytelling with tutorials, example digital stories and links to additional readings. The MOOC also provides hands-on opportunities for learners to create their own digital stories as well as give and receive feedback through a peer evaluation process.

Our MOOC was created by modifying the instructional content we use in our traditional digital storytelling graduate course and is based on the realization that many of the MOOC participants will know little about digital storytelling. All instructional materials in the course start with the basics, follow a step-by step process and are designed for a population of participants who may

speak English as a second language. All content presented in the MOOC is free of copyright restrictions since non-profit educational fair use, which many educational institutions in the United States rely upon, is not universally recognized around the world. Many of the instructional videos from the digital storytelling MOOC are archived and independently available on YouTube without participating in the course, at: https://www.youtube.com/user/brr2t

VII. Conclusion

Digital storytelling is a powerful technology tool that can be an effective activity in schools, museum, community organizations, healthcare centers and more. The process of creating a digital story, previously confined to desktop computers or laptops, is now possible with less expensive and easier to use mobile devices and web-based tools that can be used by practitioners of all ages. The digital stories that are being created can easily be shared online with others throughout the world and viewed on computers, tablets, smartphones and an increasing number of digital devices. As digital storytelling evolves, we expect to see even more individuals and groups find new and innovative ways to integrate digital storytelling into teaching and learning activities across an expanding universe of opportunities and possibilities.

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