

Digital Storytelling: Literature Review

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In an age of information inundation, it is easy to lose sight of the potential power and relevance of the ancient art of storytelling. The reality is humans communicate and process information in the form of narratives. As scientist Edwin Wilson (2002) explains:

“We all live by narrative, every day and every minute of our lives. Narrative is the human way of working through a chaotic and unforgiving world. The narrative genius of Homo sapiens is an accommodation to the inherent inability of the three pounds of our sensory system and brain to process more than a minute fraction of the information the environment pours into them. In order to keep the organism alive, that fraction must be intensely and accurately selective. The stories we tell ourselves and others are our survival manual.”

Digital storytelling incorporates the power of the human narrative with the pervasive and powerful nature of digital media. Harnessing the potential of the emergent educational and art form of digital storytelling is essential for anyone interested in the effective and humanistic dissemination of information. This literature review is designed to explain the phenomena of, explore the efficacy of, and describe the processes involved in digital storytelling.

In this literature review, we will explore the genre known as digital storytelling. We begin by defining what a digital story is, followed by a brief summary of the history of the digital story. We will then examine the process involved in creating a digital story and highlight the software available for producing these valuable methods of information sharing. Finally we analyze current applications and research involving digital stories, narrow in on applications in health and medical arenas, and close with the relevance of this media to the public health field.

Definitions of digital story telling:

Digital storytelling encompasses a diverse genre of information presentation. Considered both an art form and an educational tool, digital stories do not lend themselves to concise definition. In the simplest of terms, digital storytelling can be described as “the practice

of using computer-based tools to tell stories” (University of Houston, 2012). More specifically, a digital story is often defined as a 3-5 minute visual narrative made by ordinary people that synthesizes images, video, audio recordings of voice and music, and text to create compelling accounts of experience (Gubrium, 2009). At its core, a digital story is a narrative expressed in digital form for a variety of purposes, with applications ranging from education to personal expression, record keeping to movement promoting and everything in between.

Parameters used to define digital stories such as the duration and digital components can vary depending on the authority defining the digital story. For example, Daniel Meadows (2003) a digital story workshop instructor for BBC’s Project Wales developed a strict definition of digital stories in that they must consist of a 250 word script, a dozen pictures/moving images and be no more than two minutes in length. He argues that similar to a Haiku, these constraints give rise to the elegance of the digital story form. Other authorities on digital stories, such as the non-profit organization Information Age Education (2010) accept a broader and more inclusive definition of digital stories as “a relatively new term, which describes the new practice of ordinary people who use digital tools to tell their 'story'. Digital stories often present in compelling and emotionally engaging formats, they are usually less than 8 minutes long and can be interactive.” (IAE, 2010). Ultimately digital storytelling is the use of digital technology by diverse peoples to share their life story and creative imaginings with others.

One of the major elements of digital stories that separates them from advertisements, digital shorts, or “mini movies” is the focus on the personal narrative in the production. The narrative of a digital story guides the entire production process, and it is usually digitally recorded by the storyteller and used as the audio track in the digital story. The narrative is so central to the digital story that workshops on the subject require participants to write their narrative first, and only then gather pictures and videos for the final story compilation. This first person directive that guides the digital story avoids the traditional third person voice and, consequently, there is no distance between the teller of the story and the story itself, making digital stories a deeper approach to information sharing (Rule, 2010). This narrative approach makes the information contained in a digital story more tangible and consequently more memorable (McLellan, 2006).

Considering the narrative to be central to the differentiation of a digital story, Meadows (2003) articulately defines digital stories and their global potential as “short personal multimedia tales told from the heart, the beauty of this form of digital expression is that stories can be created by people everywhere, on any subject, and shared electronically all over the world.”

History of Digital Storytelling:

With the advent of new digital media technology crossing economic barriers from professional to personal, digital stories are the natural evolution of storytelling in a digital age. While originally only used by film students and media enthusiasts, digital stories were first codified by natural storytellers, media artists and theatre professionals in the early 1990s in San Francisco, California . The term “digital storytelling was coined by Dana Atchley, a performing storyteller who saw the potential to adapt and improve his stories through the use of digital media (McLellan, 2006). Dana Atchley, Joe Lambert and numerous other leaders in digital story proliferation wanted to explore the potential to use emerging digital technology to enhance storytelling and narrative sharing through the use of sound, image and video. Eventually the Center for Digital Storytelling (CDS) was formed and exists to this day as the academic authority on the art of digital storytelling. The CDS operates as a consulting center for businesses, non-profits, and social groups that want to take advantage of digital stories to further their message or express the narratives of their participants. The CDS runs workshops in digital storytelling that coach participants in creating a narrative and eventually compiling pictures, sounds and videos to form the final digital story. With a motto of “Tell Stories: Listen Deeply” the Center for Digital Storytelling embodies the notion that digital stories are among one of the most powerful methods of archiving and information sharing. Once a pioneer in a largely underutilized digital storytelling arena, the CDS is now one of many organizations offering workshops and instruction in the creation of digital stories. Digital story production is being taught in 45 of the 50 United States and in 16 different countries, with 60% of that instruction being utilized in educational settings and 35% in community or civic settings (Lambert, 2005). The ubiquitous nature of digital technology and the growing importance placed on the digital narrative make digital stories a

powerful new tool in the digital market.

Digital stories have been used in widely varying fields, with applications including personal stories, digital story archives, memorial stories, advocational stories, educational stories and stories in health and medicine. Personal stories bring to life memories, journeys or experiences that can now be shared and preserved in a digital form. Great stories provide listeners with a road map that elucidates the steps and tasks one has to accomplish in order to complete the journey themselves. Digital archives are a powerful form of preservation used by research institutions, historians, and citizens to capture personal information or accounts of a specific event or time period. For example the USC Shoah Foundation Institute's Visual History Archive makes available over 52,000 video testimonies of Holocaust survivors in an attempt to capture their memories and narratives through digital stories. In addition, memorial stories are being created to honor the lives of individuals and groups after they have passed. The Japanese American Legacy Project seeks to preserve the testimonies of unjustly incarcerated Americans during world war II through the sharing of digital stories created around them. Advocational stories provide support and outreach to people with certain needs or life issues. An example of advocational stories includes the Silence Speaks project that works with victims of domestic violence to help them share their stories in their own words, making survivors the face and voice of violence prevention efforts. Educational stories can range from using the personal narrative to bring forward education information on a certain topic related to the story teller, to having students create digital stories about a topic to become more familiar with the information in several dimensions including audio, emotional, visual and technological. Digital stories in health and medicine afford doctors, patients, and researchers involved in health care to share their experiences, advice, and message through the humanized method of the digital narrative. For example, the AQUIRE project created the “Learn from my story” series (<http://engenderhealth.org/our-work/maternal/digital-stories-uganda-fistula.php>) in which doctors, patients and community health workers shared their stories and experiences with obstetric fistula to augment prevention measures. Digital stories serve a myriad of purposes for individuals and groups, and the memorable and powerful potential of the digital narrative helps disseminate their messages effectively.

Creating a Digital Story:

The diversity of the digital storytelling genre has led to several approaches to digital storytelling. While the specific instructions may vary depending on what institution is teaching the art of digital storytelling there is generally a fundamental process that makes up the core of the digital story production process. These five steps, as outlined by the University of Houston's Educational Uses of Digital Story telling, create the backbone of the digital story production process. They include; creating the narrative, collecting resources, selecting content and developing a story board, digitally compiling material, and evaluating/sharing the final product. These foundational steps will be presented below with additional input from other media organizations on creating digital stories.

Step 1: Create the Narrative. As mentioned, the power of the first person narrative to connect the audience and make the information more tangible and memorable necessitates that this be the first part of the digital story creation process. This requires the participant to choose a topic or story they want to tell and draft a script from it. The Center for Digital story telling recommends that scripts be written in format that one speaks, i.e. in a more colloquial or conversational tone than a formal writing one (CDS, 2012). This helps preserve the intimate relationship the storyteller forms with their audience and humanizes the story being told. The author should keep in mind the point of view they want to take, and bear in mind the target audience they are speaking to maximize the reception and message of their story. When attempting to include educational information in the script do not lose sight of the narrative, remember that stories can provide others a toolkit for solving all of the problems that have to be solved along our own journey. Stories are a form of "expert system" for remembering and integrating what we learn (McClellan, 2006), and should thus be drafted with consideration. Keep the scripts concise as a great story does not literally explain their message but demonstrates it through example and description.

Step 2: Collect Resources. Once your script has been created, search for or create photos, drawings, charts, videos, maps or other images that can be used to visually augment your story. Save these images on a computer by either scanning hard copies of images and

drawings, or downloading un-copyrighted material from stock portfolios on the Internet. Next, look for audio tracks such as music, speeches, sound effects or other sounds that can enhance the telling of the narrative. Do not limit yourself in what type of materials you collect to present your story visually and acoustically as the beauty of the digital story lies in the myriad of ways it can be presented.

Step 3. Select content and develop storyboard. Finalize which pictures, sounds and other text you will be using to present your story. Storyboarding is a pivotal part of the digital story process as it allows you to visually align the words of your narrative with the images and sounds you have chosen for your presentation. Methods for storyboarding include drawings of each image with the corresponding narrative text placed below, attaching sticky notes with parts of the script to each image or a still frame of the video clip, or using a white board or chalk board to graphically outline your digital story. When placing images with text make sure that the image doesn't just fit the text, but comments on them, interacts with them, or expands them in some way (Microsoft, 2010).

Step 4. Digitally compile the material. Begin to import and sequence your images in a video editor (for more information on digital technology available for digital story production see section: "Software for producing digital stories"), scaling and focusing on images for optimal resolution. Use a sound processing software to record your narrative, speaking in a clear and colloquial manner. Once you have imported your recorded narrative into your video with images, you can add final touches to your story and burn it to a DVD, CD, or publish it to the Internet.

Step 5. Evaluate and share. Once the digital story is finalized, it can be shared in a variety of ways, lending power to the narrative in its potential to speak to others who may see it. Stories allow us to pass along knowledge and share experiences in a palatable format, and once a digital story is created it can be shared in public or group screenings, publishing on the internet, or shared among family or friends.

The CDS has published seven elements that they believe are essential to any digital story, and it is important that these elements are kept in mind during the production process.

First, the point of view: the main point of the story and the perspective of the author.

Second, a dramatic question: a key question that keeps the viewers attention and will be answered by the end of the story. Third emotional content: serious issues that come alive

in a personal and powerful way and connect the story to the audience. Fourth, the gift of your voice: a way to personalize the story to help the audience understand the context. Fifth, the power of the soundtrack: music or other sounds that support or embellish the storyline. Sixth, economy: using just enough content to tell the story without overloading the viewer. Seventh, pacing: the rhythm of the story and how quick it progresses, (CDS, 2012).

Software for Digital Stories:

The digital story ultimately must be compiled and polished on some sort of video or photo editing software. Depending on your situation and budget, there are numerous outlets that allow for digital story production. For photo compilation and processing, hard copies may be scanned onto a computer, a phone with a camera can email photos, any digital camera can capture new images and transfer them to a computer, and bearing in mind copyright issues, images can be downloaded from the internet. Many university libraries have cameras for loan, and the ubiquitous nature of cell phone cameras has made photo collection a less technologically demanding task than ever before. If you want to edit your photos before including them in your narrative, Adobe Photoshop is the most popular and comprehensive imaging software. Using a layer approach, this program allows users to apply filters, texts, and other images to their photos. The full version costs around \$700, with a scaled down Photoshop Elements costing around \$100. For windows users, GIMP is a free open source photo-editing program with a set of features similar to Photoshop. For Mac users, iPhoto is an excellent program that comes as part of the iLife suite that allows users to edit and organize their photos. Finally there are a number of free online photo editors that anyone with Internet access can use. These include Picknik (www.picnick.com), Pixlr (www.pixlr.com) and Splashup (www.splashup.com) and can be found through any search engine.

After the photos have been edited music and sound software can be utilized to record the narrative and edit audio tracks or music. Audacity (www.audacity.sourceforge.net) is a free open source program for Mac, Windows and Linux platforms that allows users to record and edit sounds with any USB microphone plug in. Another web-based program is the search engine Findsounds

(www.findsounds.com), which allows users to search the web for sound effects and musical samples. On Macs, Garage Band and iTunes provide music creation and organization capabilities with easy exporting to video production software.

The video editing software you use largely depends on your operating system so we will review the software in the categories Mac compatible, PC compatible and broad interface editing programs. For Macs, iMovie is a video editing program that allows users to create a timeline of images, videos, sounds and effects. The benefit of iMovie is that you can include numerous audio tracks, so narration as well as music and sound effects can be added to stories here. The iDVD program on Macs allows the easy burning of digital stories to DVD format. Many libraries, apple stores, and universities offer workshops in Macs iLife software and there are numerous tutorials online to gain proficiency in video editing. For more professional looking digital stories, Final Cut Pro can be purchased for \$1,000 and a scaled down version called Final Cut Express may be purchased for \$199. This high-end video editing program provides an extensive variety of tools to customize the compilation of video, image and sound.

For PC's, Windows Movie Maker usually comes installed on the computer itself. If it did not Microsoft's website offers a free Windows Live Movie Maker on their website. Movie Maker is similar to iMovie in that it lets you edit images, video and sounds to create a moving story. There are limitations to this software in that it only allows for one audio track, so you cannot overlap music and narration in your digital story. Photostory is a pc based program that can be downloaded from Microsoft's website (<http://www.microsoft.com/download/en/details.aspx?id=11132>). Photostory allows the storyteller to just use photos (not video), and add music, narration and zooming effects to their photo collection. Pinnacle Studio is a windows video-editing program that can be purchased for \$50-\$130 depending on the version you want. It expands upon the capabilities of Movie Maker, allowing the creation of high quality audio files and improved video effects and transitions.

There are a number of programs that can be run on both Macs and PCs that can create digital stories. PowerPoint is a less sophisticated method of creating digital stories, but the ability to add audio to the slides permits for the compilation of a digital story with an overlaid audio narrative. For users with low memory space or a minimal budget, there

are also a few web-based programs that afford video editing capabilities. Animoto is a simple tool that takes images, videos, text sound and music and creates an MTV style music video. For 3-30\$ you can produce non-commercial videos, and for 240\$ you can purchase a commercial video with access to a collection of video and music licensed for commercial use. Voice Thread (<http://voicethread.com>) is a more social video editing software that allows users to edit video sound and images to form stories that they can share on the website. People can comment, even video comment on each other's work forming a frame around the central image or video (Czarnecki, 2009).

Digital Stories in Education

A major use for digital stories has been as a learning tool in classrooms from elementary school to university education. Digital stories are useful in both their creation and their viewing by students, and there has been a significant amount of study into their effectiveness in the classroom. In regards to theoretical research, Barrett (2006) purported that digital storytelling facilitates the convergence of four student-centered learning strategies: student engagement, reflection for deep learning, project-based learning, and the effective integration of technology into instruction. Additionally, Jonassen and Hernandez-Serrano (2002) showed us three ways in which students can learn via digital stories. First, they can be used as visual and conceptual examples of concepts/principles being taught by direct instruction. Second, they can be used as problem cases to be solved by students. Third, stories can be used as personal advice for students in how they approach problem solving. Researchers have also found that digital stories are a powerful tool in language education that improves the level of learning in reading, writing, speaking and listening (Tsou et al., 2006, Gregori-Signs, 2008). While digital storytelling is most frequently used as an aid in teaching history, arts, or humanities (Combs & Beach, 1994), it has recently gained momentum as a teaching tool in the sciences and mathematics. For example, Schiro (2004) found that using digital storytelling to teach algorithms and problem solving allowed him to present the material in a context that is interesting and engaging, and at the same time presented the mathematical skills students needed to learn. In a study designed to determine the effects of using digital stories across the entire curriculum, (social studies, math, reading, writing and science) Sadik (2005)

found that the digital program Photo Story made it easy for students to become involved and active participants in their own learning process. The value of digital stories in education has been studied repeatedly with qualitative reports demonstrating a positive learning experience and an augmented teaching process.

Digital stories in commerce

Digital stories are not limited to the classroom, and as of late are beginning to burst onto the corporate scene as a valuable tool for advertising and education. While research in this sector is limited, there are numerous case studies that have been met with success. For example, Coca-Cola has launched the “world of Coca-Cola Las Vegas Attraction” in Nevada where participants watch digital stories created by people who express what coca cola has meant to them. One of such stories tells the tale of a man who brought six coca colas to WWII, drank five, and kept the sixth as a trophy of his return home. It is told by his granddaughter who still has the sixth bottle of coke in her hand during the footage of the story (McLlelan, 2006). Coca Cola then allows visitors to create their own digital stories on site about what coke has meant to them, effectively gaining audience participation in reinforcing the brand of coke through the digital story. In addition, Bill Dauphinais of PricewaterhouseCoopers LLP has been using digital stories to teach members of the accounting and consulting giant about the PwC brand. In collecting stories about the company’s founders, partners, and clients, and capturing those stories on digital video on his PC he has been able to travel the world, regaling employees with video tales of the firm's core values. "Brands are built around stories," says Dauphinais. "And stories of identity -- who we are, where we've come from -- are the most effective stories of all. This is a powerful way to bring them to life," (Pink, 1998).

Digital Stories in Health Promotion and Medicine:

One of the major areas of application for digital stories has been in health and medically related fields. Digital stories provide a platform to disseminate health related information through the narratives of doctors, victims of disease, researchers, or people with intimate experiences with the health issue at hand. For example, in medical

education digital stories are being used to teach case studies about rare diseases to medical students, and studies are showing this to be an incredibly effective learning platform. A study focusing on third year medical students exposed to digital stories of pediatric patients describing their journey through a rare and debilitating illness found that after watching the digital story, students felt they could begin to evaluate a similar case presentation (95.4%), and would remember the case in the future (91%) (D'Alessandro et al.). This study demonstrates the memorable and effective learning potential inherent in the personal narrative of victims of disease. In addition, Hope Lab had seven young cancer survivors from across the united states participate in a digital storytelling workshop to capture the cancer experience and its impact. Their digital stories helped Hope Lab and medical professionals understand the needs and interests of young people undergoing cancer treatment and young cancer survivors (CDS, 2012). Capturing the experience of individuals involved with the medical issue on hand remains a powerful tool for patients undergoing similar issues or researchers who may benefit from the hyper personalize form of information sharing.

In addition, digital storytelling has demonstrated its value as a tool in public health research and health promotion. For example, Dr. Aline Gubrium (2009) found that digital stories were an invaluable tool in her research into reproductive health issues among women. She found that compared to the interview style of obtaining information, viewing the digital stories created by these women “allowed the multiple dimensions of their experiences to come center stage” and that she was able to “interact with the participants on several levels and with a different power dynamic than is created in the interviewer-interviewee relationship.” The usefulness of digital storytelling as a research tool is just beginning to be explored, and the personal insight it offers provides a promising look into a future tool in the interviewers arsenal.

Summary/Future Research

Digital stories provide an invaluable, personal medium for individuals to publish and share their stories. The messages embedded in these digital stories gains memorability and digestibility in being a part of a human narrative. The digital element of the stories allows the user to infuse image, audio and video into the story, adding

several more dimensions of impact to the story. They have the potential to capture the sentiments of an entire community, and extract a common meaning or approach to problems solving when viewed in groups. When all the elements of a digital story combine, and all the potential projects for their use crystalize, it is clear that digital storytelling is a powerful tool in the field of digital media and information sharing.

While current research is largely theoretical and qualitative in scope, future research would benefit from quantitatively assessing the efficacy of digital stories. Additionally digital stories should be academically evaluated in their potential to advance fields beyond education such as community building, advertising, archive creation and social media. The possible applications of digital stories are endless, they allow the user to condense a necessary message into a memorable and powerful narrative, invoking the use of audio and visual imagery to compliment the story and augment the message.