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Digital storytelling : the impact on student engagement, motivation and academic learning

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Digital storytelling : the impact on student engagement, motivation and academic learning

Abstract

The purpose of this literature review was to examine the effects of storytelling on student engagement and motivation, literacy skills, and content knowledge across curriculum areas. In this review, over thirty purposefully selected peer-reviewed journal articles about the effects of digital storytelling on students' learning in the classroom were critically analyzed and evaluated. The research evidence showed that digital storytelling increases student motivation and engagement in student-centered projects. It had a positive effect on the improvement of literacy skills, other content knowledge and the 21st century skills both for the normal students and the students who normally struggle with writing a story. Students were more engaged when they were in control of reflecting, visualizing, and creating more meaningful digital stories to share with a large audience.

DIGITAL STORYTELLING: THE IMPACT ON STUDENT ENGAGEMENT,
MOTIVATION AND ACADEMIC LEARNING

A Graduate Review

Submitted to the

Division of Instructional Technology

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The purpose of this literature review was to examine the effects of storytelling on student engagement and motivation, literacy skills, and content knowledge across curriculum areas. In this review, over thirty purposefully selected peer-reviewed journal articles about the effects of digital storytelling on students' learning in the classroom were critically analyzed and evaluated. The research evidence showed that digital storytelling increases student motivation and engagement in student-centered projects. It had a positive effect on the improvement of literacy skills, other content knowledge and the 21st century skills both for the normal students and the students who normally struggle with writing a story. Students were more engaged when they were in control of reflecting, visualizing, and creating more meaningful digital stories to share with a large audience.

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Introduction

What is your story? Everybody has one and most want to share their stories and experiences. Storytelling has always been a central part of learning for children in all cultures and a key to educating people through generations. From the early cultures of Egyptian hieroglyphics, Greek methodology, Aborigine rock art, and Native American elders oral traditions have been used to pass down history from one generation to the next (Roby, 2010). This storytelling history is a key tool in the teaching of literacy skills and other concepts, which are vital to being successful as an adult in society. Storytelling is a natural method of human communication and is prevalent in all aspects of human social interaction. People tend to make better sense of complex ideas, concepts, or information when it occurs via storytelling (Chung, 2006). In this context, Sadik (2008) states storytelling can be used to enhance a student's higher-order thinking and literacy skills. Using technology to enhance the storytelling in our classrooms is a key to learning today.

One way to integrate technology into classrooms across curricular areas is through digital storytelling. Technology integration is a must in classrooms, but it must be done effectively by enhancing the learning of students, not for entertainment (Campbell, 2010). Students today are comfortable with technology. Using this technology for digital storytelling allows students to increase literacy and academic skills.

Literacy is changing in schools today. How is literacy defined? According to Learnersdictionary.com, literacy is defined as; *the ability to read and write; quality and state of being literate*. Today, literacy covers much more than just reading and writing; it now incorporates technological literacy, visual literacy, media literacy, and information literacy (Sylvester & Greenidge, 2009). With new literacies being recognized, it is time to bring

modern technological tools, such as: computers, scanners, video, iPads, and cameras, into classrooms to update student learning using storytelling in the 21st century. By using 21st century skills, literate students cannot only read and write but analyze, synthesis, evaluate and create as a means to navigate and understand complex information (Sylvester & Greenidge, 2009).

In classrooms, teachers help and encourage students to convey their stories. The medium they use is changing, however, as technology has become an essential piece of our education today. Many multimedia components, such as: images, sound, music, and graphics, are added to present the story in a way in which many new literacy skills are touched upon. This new form of storytelling is called digital storytelling. Digital storytelling allows teachers to use a combination of literacy skills and technology to help students create meaningful projects. Literacy has become much more than just students reading and writing. Through digital storytelling students are creating multimedia presentations to tell personal, authentic stories. As part of the 21st century literacy skills students need to be able to use the technology they have in an effective manner, not just for the sake of using technology.

It is important to remember that no matter what content area or grade level you teach, you are using literacy in your classroom. Students need to convey meaning and communicate effectively with others in order to be successful in life. Miller (2010) states that there are seven reasons demonstrated by elementary writers that give support of the use of digital storytelling in the classroom:

1. Digital storytelling engages and empowers students of all levels; students become more invested in their writing and give more effort.
2. Digital Storytelling projects build community in the classroom.

3. Strengthens the sense of audience.
4. Projects can be short and still be effective.
5. Digital stories can be used across the curriculum.
6. Process is key. Projects teach writing and technology skills.
7. Prior Knowledge can drive the story and moviemaking. (p. 6-9)

Students in our classrooms today need to be motivated and engaged in ways that hold their attention. In order to strongly engage students in classroom activities it is important to keep learning student-centered by using digital media (Roby, 2010). Digital storytelling allows students to become engaged across the curriculum by the use of many forms of media that they are familiar and comfortable using. Using technology in the classroom reaches beyond the realm of entertainment and instead promotes student involvement with in authentic storytelling with enhanced digital creations (Roby, 2010). Keeping kids attention in reading, writing, and academic content is increasingly hard in the world today, as it has become more technological. There is a need to add projects that incorporate what students already know, technology (Wawro, 2012). Motivated students take ownership of their learning and are invested. Robin (2008) states that, “motivation is a critical ingredient for learning, and research studies that demonstrate increases in motivation by students that participate in digital storytelling and similar technologies should be designed and conducted” (p. 227).

The purpose of this review is to explore how integrating digital storytelling into the K-12 curriculum will improve literacy skills and content knowledge across the curriculum while engaging and motivating students. This review examines over 30 peer-reviewed journal articles and four landmark studies to answer the following questions:

1. Does digital storytelling improve student literacy skills?
2. Does digital storytelling effect student engagement in the classroom?
3. Does digital storytelling effect student motivation in the classroom?
4. Can digital storytelling be used across the curriculum?

Methodology

As mentioned above, this literature review was to investigate the impact of digital storytelling on students' engagement, motivation, and academic skills when integrated across curriculum areas. The sources for selecting relevant literature were the database ERIC, EBSCO, Google Scholar, Science Direct, and Onesearch!. The University of Northern Iowa Rod Library was also used to locate books that had relevant information about the topic. The key search terms include *digital storytelling, elementary, middle school, high school, literacy, writing, math, science, across curriculum, storytelling, 21st century learning, student motivation, student engagement, iPads, 21st century skills* and various combination of these terms.

An abundance of articles were located by using these key terms and many were found by the snowballing of references from relevant articles. The snowballing process occurs when an article leads to finding other articles that were either cited in an article or who cited the article.

The literature was sorted and narrowed to 35 articles which were used to complete this review. The articles collected from the databases were chosen based on the date of publication, with preference given to those published in the last 10 years to ensure that 21st century skills were present. Selected articles contained valid quantitative and qualitative research data on the subject. A preference was given to articles which were peer reviewed. Two books were used as resources in the review as they were written by teachers who have used digital storytelling in classrooms at the elementary and middle school levels. Notes from each article were taken and organized in usable reference categories. The research notes were divided into research question headings. This helped to connect different

literature to multiple research questions being addressed. Many of the articles about student engagement gathered information using observations, rubrics, and student interviews.

Statistical information was more relevant for articles talking about literacy in the classroom.

Observations were made to see how literacy and digital storytelling were combined to be integrated into the many content areas that are taught in schools.

Analysis and Discussion

The value and power of storytelling is recognized across cultures and disciplines; there is evidence that preliterate cultures relied on storytelling to educate (Macdonald, 1998). Porter (2005) stated that digital storytelling takes oral storytelling and engages a variety of technical tools to weave personal tales using images and graphics, along with music and sounds, together with the author's own story voice to create a new engaging story. Before knowing the impact of digital story telling, it is very important to know "How has storytelling been transformed through time to improve multiple literacy skills in education?"

Defining Storytelling and Digital Storytelling

There are many definitions of "storytelling". Gere, Kozolvich, and Kelin (2002) define digital storytelling as "the act of using language and gesture in colorful ways to create scenes in sequence" (p.2). Storytelling has traditionally focused on telling folktales, fairytales, myths, legends, and other familiar tales, which have been passed down through generations. These stories introduce students to many genres and help develop an appreciation for other cultures and traditions. Familiar stories are highly motivating and easier for students to retell; this allows students to modify the stories with personal touches and thoughts. Through storytelling in the classroom, students are able to become more innovative and creative while focusing on the message they want to communicate (Porter, 2005). Wright, Baciqalupa, Black and Burton (2008) believe the ability to dramatize stories allows students to utilize higher-order thinking skills. Students are able to make real world connections, demonstrate understanding of content, and are better able to express themselves and their ideas.

Digital Storytelling is defined in many ways, but in general, they all revolve around

the idea of combining the art of telling stories with a variety of digital multimedia, such as: images, audio, and video (Robin, 2008). The digital storytelling process starts in the same way as traditional stories with an idea, content collection and tools to bring the narrative to life. Digital Storytelling is an emerging form of storytelling, which has the same characteristics of traditional oral and written stories while offering a digital spin. Porter (2005) suggests the developing a digital story becomes a process that consists of technical skills, collaboration, communication, oral speaking, creativity and visual and sound literacy so that students use multiple intelligences, develop higher order thinking skills and become effective communicators, collaborators and project managers. Porter further argues that the old art of storytelling combined with the technological savvy students in classrooms today has the power to improve multiple literacy skills, including digital literacy, global literacy, visual literacy, and information literacy. It also increases content learning, engage students and motivate students across the curriculum in schools today in addition to mastering many 21st century skills and meeting technology standards.

The technology needed to create these digital stories is available in almost all schools. Computers, iPads, and even cell phones have capabilities to help students create these stories. Many of these tools come with standard programs such as iMovie, iPhoto, and GarageBand (Macs) and Windows Movie Maker (PC). There are also many applications available for all levels of students from Kindergarten to college. These available tools allow teachers to prepare students for the future by teaching them the literacy skills they will need to compete in a world focused in the technological realm (Karchmer-Klein & Shinas, 2012). According to the National Center for Education Statistics, or NCES, (US Department of Education, 2009), 97% of public school teachers have computers in their classrooms, and of those, 93%

have Internet access. The percentage of computers in classrooms and those with Internet access should have increased over the five years since the statistics were given. One might think that an equal amount of multimedia presentations are being created due to the access schools have to technology. However, data from the NCES shows that only 42% of teachers have students create multimedia presentations. Students use a wide variety of multimedia in their everyday lives, so using technology in the classroom to enhance skills and to engage and motivate students seems natural.

Engagement and Motivation

Engaging and motivating students has become a focus that is as important as the content we teach. Student engagement can be defined as a student's willingness to be actively involved in school activities (Skinner & Belmont, 1993). Students across the grade levels are engaged and motivated when they have the control of their learning which is extended beyond the four walls of a classroom (Sadik, 2008; Yang & Wu 2012).

In one of the earliest studies about students' motivation when using digital devices, Skinner and Belmont (1993) investigated the relationship between teachers behavior and student motivation. The sample was 144 third through fifth grade students and 14 teachers. The findings showed that students' motivation and behavioral engagement had a correlation to the behavior and involvement of the teacher. One limitation of the study was that it took a one-direction approach; looking only at how teachers' behavior affects students' motivation and engagement and not vice versa. Another limitation was that the quantitative data hardly provided in-depth insights about students' learning process without hearing directly from the students' point of view. Skinner and Belmont concluded that students who were engaged knew the value of the investment of their learning and put forth effort to understand the

content being taught. Thus, the key to student engagement is to motivate students in the classroom.

Kervin and Mantei (2001) conducted a qualitative study of preschool students participating in the This Is Me (TIM) project done the Illawarra region of New South Wales, The researchers followed one 4-year-old child very closely by observing how she created a digital story to teach others about herself by using pictures and voice. During the process it was noted that she turned from a normal, very quiet and reserved child into an excited, active leader. Although the findings of this study are based on the study of one student in a special context, it stresses the importance of using technology to share one's own story starting at a very young age. Kervin and Mantei conclude that when individual ideas and using creativity are present during a project, it engages students in the process of their learning. The finding has been confirmed by other large-scale studies.

In order to fill the research gap, Sadik (2008) conducted a mixed methods study with 280 6-15 year-old students over three months in two private basic education schools in Qena, Egypt. The observation findings showed that when digital storytelling provided students with student-centered learning, students stayed engaged when they were actively involved in the process of their learning. The interview data confirmed the observation findings. Students commented they stayed on the task when they created their own digital stories. It was also found when teachers and students worked collaboratively on projects, students benefited by being challenged to think critically while evaluating and creating their projects. Sadik concluded a positive impact of creating digital stories on student motivation and engagement.

In order to further explore long effects of digital story telling, Campbell (2012) conducted a two-year study of 25 5th and 6th grade students who used iMovie to create their

stories. The researcher used an action research methodology to measure self-perception and time on task by collecting interviews, observations, and writing samples and evaluations. It was found that 70% of students were able to stay on task, 96% were engaged in digital storytelling, and project completion was 100%. It was discovered that digital storytelling not only enhanced and motivated students but also improved the level and quality of writing. There was a direct correlation between student motivation in the classroom and student achievement on literacy and other academic tasks. There was also a direct correlation between self-perception of oneself as a good writer, time spent and task completion. It was concluded that the most dramatic improvement came in the area of engagement.

Beyond the elementary and middle school levels, high school students may also benefit from engaging in digital-story telling. Malin (2010) conducted a study on high school students. While evaluating high school sophomores and seniors the researcher noticed how digital video and digital stories had value as reading aids to engage students. The data showed that digital storytelling was more engaging for 88% of the students and that 96% felt that they were more prepared for class discussions. Students were more engaged during discussion and motivated to learn the content of the class when using digital storytelling in reading and writing. This confirmed the findings of Sylvester and Greenidge (2009) and Campbell (2010) that when reading and writing became more student-centered, students took more ownership and have more involvement in the process of various interactions: teacher and students, students working in small groups.

Dugan and Robin (2009) conducted a qualitative study examining K-12 teachers' and students' perspectives of learning using digital storytelling by comparing students' level of engagement in the same content both in a traditional classroom and a classroom using digital

storytelling activities. Dugan and Robin built upon the previous studies by moving from one classroom to multiple classrooms across multiple age levels. The researchers noticed an increase in students' motivation and engagement. Through interviews with students, researchers found that approximately 70% wanted more digital storytelling activities in the classroom. There was a noticeable increase in student engagement when using digital storytelling with students that Prensky (2005) describes as the students who "tune us out".

Can digital story telling have a long-term impact on student learning beyond one content area? To answer this question, Yang and Wu (2012). conducted a one-year quasi-experimental study involving 110 tenth grade students exploring the impact of digital storytelling on academic achievement, learning motivation and critical thinking skills. It was found that digital storytelling as a student-centered activity could engage students in taking control of their learning. As a result, they were highly motivated in working with their peers. They increased collaborative, creative, critical thinking skills, technological skills as well their confidence in their writing skills. Therefore, integrating technology in story telling moves students from working on traditional skills to preparing them for 21st century skills as noted in prior studies of other levels (e.g., Kervin & Mantei, 2011; Malita & Martin, 2010).

Digital story telling can also benefit college students. In a quasi-experimental design study, Xu, Park, and Beak (2011) investigated the impact of using the virtual reality-learning environment, "Second Life", to create digital stories for 64 South Korean college students. It was found that 32 students, who used -"Second Life", demonstrated stronger capability in communication, critical thinking and collaboration. They developed a higher level of writing self-efficacy and better flow while applying the content they are learning through the use of digital storytelling compared with the students in the control group who used the off-line

video editing software. The study was limited to a short period of time and it is hard to say whether the results were caused by the “novelty effect.”

While the above research evidence indicates that digital-story telling has a positive effect on motivation and engagement with general education students, there is a need to see how it would affect students who are struggling with reading and writing. In a qualitative study, Sylvester and Greenidge (2009) investigated how using digital storytelling would motivate students who struggle with reading and writing. The study was conducted with three fourth grade students who struggled with reading and writing for multiple reasons; which caused them to be less engaged in the traditional writing process. One student struggled to start writing, one student hurried to get done and didn't correct his drafts, while the last student struggled to add details. Being able to add voice to her story the last student was able to become very engaged and motivated to add expression and details to her story. While working with peers, these three students were able to develop their writing skills and begin to view themselves as “good” writers which motivated and engages them in their assignments. Although this study is limited by observing three students struggling with writing, it provided insights about students who struggled with reading and writing for multiple reasons.

Another factor for engagement is to make connections with student personal experience by creating digital stories. Telling a story that makes connections to personal experiences and knowledge helps students to retain information on the content they are learning. These connections will engage students in the content being taught. Digital stories appeal to listeners by using the power of voice is something printed stories cannot convey (Lowenthal, 2008). The voice used to create the story allows for students to express

themselves. Self-expression and technology are key factors in the increase of student motivation and engagement while using digital storytelling.

Making connections with the world can further be done through sharing one's digital stories with a large audience beyond their teachers and peers. Through the peer and public feedback students began to view themselves as writers. A sense of accomplishment can engage and motivate students to learn (Greenidge & Sylvester, 2009; Malita & Martin, 2010). Knowing their stories will be shared with large groups of people helps motivate students to create better projects. Stories are no longer shared between just teacher and student in language arts classrooms. Today, individual students or collaborative groups of peers in the classroom develop stories by using their physical world, experiences and technology they know. This collaboration develops the classroom into a community of learners who work together to solve problems and develop digital creations.

In summary, when using digital storytelling in the classroom, students encompass both traditional and 21st century literacies, which boost their motivation for traditional writing with both general education students and those who struggle. Digital storytelling can be effective in motivating students from kindergarten through college by engaging in student-centered activities and technology-rich learning environment.

Literacy Skills

Literacy encompasses reading and writing, and the practicality of books, pencils, and paper in the classroom is still essential for learning. However, in today's technological world adding technology into literacy adds a new level of excitement to the reading and writing process. Literacy has become more than just reading and writing. According to Robin (2008), 21st century literacy is a combination of the following literacy skills:

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

(p. 224)

Ohler (2005) conducted a study in a 6th grade language arts classroom for this writing assignment with a combination of traditional story writing and digital emotions. Using their own voice makes the story a personal narrative and captivates audience. Digital storytelling is able to connect with many of these new literacy skills while keeping focus on the foundation of literacy, reading and writing. Focusing on the power of the story rather than on the power of technology is sometimes a problem for students, and part of the task of a digital storytelling teacher is to teach the students how to be a storyteller. Story mapping and written and oral storytelling are two important components to practice before beginning digital elements. Mapping is key in telling a meaningful story (Ohler, 2005).

Does digital storytelling improve students' literacy skills? Researchers Sylvester and Greenidge (2009) found in their qualitative study of struggling writers in fourth grade who were struggling for different reasons that adding a digital format to the written text and combining images helps to deepen students understanding of the text. Students were asked

to use both old and new literacy skills to complete the project. Examining three types of struggles for writers across grade levels allowed the researchers to give an overview of the benefits of digital storytelling in the classroom. Their findings included that using digital storytelling as part of the writing process helped students to discover their voice, build confidence, and improve the structure of their writing. For those students who struggle with traditional literacy, digital storytelling helps to tap into other literacies and build an understanding of all literacies. Struggling writers often lack the ability to organize their writing; however, the digital storytelling process helps these students become more organized in their story by using a process called story mapping, or a storyboard, to help organize thoughts and progress through the story. Struggling writers often take less time to review and edit their writing product, but when they know their work will extend beyond the classroom and their peers they are motivated to address issues in their writing and become aware of their audience. For these struggling writers, the use of digital storytelling, which is shared online, allows them to use their digital literacy, technological literacy and visual literacy to develop and share their stories. Digital literacy is used to help them gather and deliver their story, technological literacy is allowing them to use computers and other devices to create, improve and produce their story, while visual literacy allows them to add images to enhance stories and help to convey the meaning of their stories.

In a recent study of how digital stories touch youth in after school programs, Meier (2014) looked at how student's literacy skills were affected when using digital storytelling. Digital storytelling is not only a story with pictures created on a computer with writing and digital imagery; it is much more. Digital storytelling encompasses a full set of literacy skills for students. Basic literacy skills such as reading and writing are now joined by 21st century

literacy skills. Through digital storytelling, students use research skills to search and analyze information, organizational skills to manage information, time and the assignment they are given, presentations skills to develop a project that grabs the attention of their audience and problem solving skills to overcome obstacles that might occur during the project. Making digital storytelling projects collaborative in nature builds intrapersonal skills as they take on a role in a group along with assessment skills. Student will not only analyze their own work but that of others; offering feedback on their peer's projects gives them a chance to see how others have develop the project.

The positive effects of digital story telling were also evident in the school context outside of the United States of America. For example, in their study of 12 primary students in England, researchers Burnett, Dickenson, Myers, and Merchant (2006) concluded the dynamic sense of process occurs through the constant reading, writing, and digitization of students' stories. The separation from text encourages storywriters to edit and revise their work more thoroughly. Thus making students more confident in their abilities to create and bring meaning to content in a variety of media.

Examining second grade students' self-perception as writers and the quality of their writing when completing traditional and digital storytelling projects allowed Thesen, Kara-Soteriou, and Abadiano (2008) to look at stories through different literacy's. Digital storytelling supported students learning in oral, written and digital forms. The teacher took on the role of "principle storyteller" to inspire her students. A group of 18 second-grade students completed the Writer Self-Percentage Scale developed by Bottomley, Henk & Melnick in 1998 and a personal narrative prompt, which was scored according to a grade appropriate rubric. The students were split into two groups; traditional storytelling and

digital storytelling. After working through a ten-day project of developing a digital story, Thesen (2008) noticed the students continuously asked to digitalize all of their writing. Students expressed how the process of creating this story helped them not only with the process of revising their writing but also with becoming more confident storytellers (Thesen & Kara-Soteriou, 2011).

In research that included Egyptian students between the ages of 6-15, Sadik (2008) concluded that not only did their traditional literacy skills improve through the use of digital storytelling, while using the Internet to add images, music, and voice their technology skills also improved. The literacies required to create a digital story bridge the gap between informal and formal learning, thus allowing students to create stories that tell of their everyday lives.

Digital storytelling gives students the power to express themselves through multi-literacy modes. It gives students the power to communicate their stories to a wide audience, increases the knowledge of the subject matter and improves literacy skills. Technology is an exciting and motivating tool for teachers to use in classrooms reaching readers and writers alike (Hett, 2012). Digital storytelling encourages students to explore new ways of reading and writing while connecting with new literacies in the classroom. While reading writing, speaking and listening are a focus for language arts they are not just for language arts classrooms. They should also be used across curriculum areas, such as: science, social studies, and technical subjects (Butler, Maond-Amaya & Yoon, 2013).

Across Curriculum Integration

In all curricular areas students use literacy; however, the content covered is different. Today storytelling can be appropriate for more than just language arts projects. Can digital

storytelling be integrated into math, science, history, and foreign language? The use of digital storytelling can be effective in technological, mathematical, logical, and scientific thinking skills (Porter, 2005). Through the use of digital storytelling students and teachers are able to make connections across curricula areas and communicate more effectively their experiences to an audience. Digital storytelling needs to be integrated across the curriculum and grades levels while connecting the technology used to tell the story to the literacy. Basic computer skills should not be the focus of digital storytelling in the classroom; students should be using the technology to convey, design, and produce their personal stories for a large audience (Butler, Maond-Amaya & Yoon, 2013).

In a second grade classroom the teachers observed children creating digital stories using media. Students were observed doing projects in a mathematics class. The Common Core State Standards for math emphasize the use of reasoning and practical application. By connecting to real world, authentic learning students are able to remember and develop more of an understanding of the content (Common Core State Standards Initiative, 2012). Focusing on geometry the students created digital stories using the point of view of a geometric shape. The focus stayed on the content area and literacy with digital components used to enhance the story. Students were actively engaged in the project. (Butler, Maond-Amaya & Yoon, 2013).

As teachers work to meet and develop their curriculum to meet the Common Core Standards there becomes the need to differentiate instruction and make learning a more authentic process. The Common Core State Standards emphasize the use of authentic learning across the curriculum with a push to integrate technology and strong peer collaboration into the classroom. Using digital narratives would engage students across

curriculum areas when used effectively (Butler, Maond-Amaya & Yoon, 2013). The standards provide a framework for all students with the intention that learning will be “robust and relevant to the real world, reflecting the knowledge and skills that our students need for success in college and careers” (Common Core State Standards Initiative, 2012). As teachers work with the “Net Generation” there becomes a need to use technology to motivate, engage and communicate with students. Digital stories can be used at all levels of schooling kindergarten through college. The simplest story about what sinks and what floats in an elementary classroom to the creation of a complex story of a college graduate student immerses the student in learning. Digital stories are not just providing information to the audience; instead the information must be given a personal point of view to give a voice to the writer (Kieler, 2010).

Sadik (2008) worked with 6 to 15 year old students and 4 classroom teachers while conducting his research on digital storytelling in the classroom. The teachers who participated in this study were from multiple curriculum areas including math, science, social studies and English. During his study he found many ways to use digital storytelling to enhance the learning in the science classroom. Using stories to show how to make something or demonstrate scientific processes are two ways to use technology in the science classroom. Making science authentic for students not only motivates and engages them but also helps them to develop the content of the subject. Learning and teaching science with stories not only engages students but also allows students to teach each other the concepts they are learning. Across grade levels, stories can be used in the science curriculum. By allowing students to experiment and then tell about the experience makes the learning more relevant to the students and gives them ownership of their learning.

Digital stories were found to enhance a fourth-year Spanish classroom in Castaneda (2013) study conducted through the University of Miami. The digital storytelling project completed by the foreign language students in this study followed the writing process and engaged students in a meaningful, authentic task. Providing student-constructed meaning through authentic task instruction creates a more personal experience for the students, thus motivating them to learn. Through the conduction of student interviews the researcher collected and analyzed student data. Students found that the use of digital storytelling put what they were learning in the context of real life situations. Through the process, students made personal and emotional connections through their stories, they used the foreign language in context of their own lives, which helped them to retain content from the class (Castaneda, 2013).

Surveys were used in Banaszewski's (2002) study of a fourth and fifth grade social studies class using digital storytelling. "Are you a writer?" This question was posed to the class before starting the digital storytelling project; 60% of students responded "Yes." After the Place Project, the question was revisited with 90% of students responding "yes." Developing an emotional tie to the topic helped to strengthen students understanding of the content being taught and motivates student learning.

Drevon, Kerper and Landis (2011) followed the middle school math teacher through his journey of using math video stories to teach key math concepts in his classroom. Drevon and Kerper are educational technology professors and Kerper is a young adolescent literature professor who taught the teacher during his pre-service years. They observed the teacher using his YouTube Channel to convey critical math skills to his students through short video stories. Students were able to access the YouTube channel at home when they needed help.

This would be very beneficial for those students who are struggling with a concept, as they could view it many times on a medium that engaged them. Using humor with students while covering contents is found to be engaging to students, as well.

Bringing this new technology to the classroom is not as simple as handing a student an iPad or hooking her up to the Internet. Teachers need to be educated in digital storytelling as well. Tyler, a middle school math teacher, was educated as a pre-service teacher through an instructional technology class and in a young literature class (Drevon, Kerper & Landis, 2011). Using technology that many students see as entertainment in the classroom is not something that is simple for most teachers. The researchers found that the use of YouTube for not only students but also for teachers to see examples of good digital stories is important. Book talks are being used to help pre-service teachers to reflect on the difference in points of view. These teachers were asked to decide if they would take the point of view of a bird's eye view, a worm's eye-view or a head on view of the story and retell it by creating a digital story. Students became familiar with the technology they would be using to create their projects. When choosing what tool to use with students, teachers must be able to decide which will present students with the most educational benefit. When presented and used correctly, digital storytelling can be one of the most powerful tools used with the digital natives in classrooms to connect students to the information teachers are trying to convey. The findings in this study confirmed that to make learning purposeful for students, teachers must know how to produce and integrate content-related authentic digital stories in the curriculum (Roby, 2010).

A study conducted by Robin, Yuksel, and McNeil (2011) included participants who were interesting in using digital storytelling in their classroom or college learners from 26

different countries and showed that teachers along with students needed be engaged and taught to use digital storytelling. While teachers agree using digital storytelling in the classroom is beneficial for students they also agree there is a need for more training. It is not only important for the teachers to understand the technology but also to understand the process and procedures to create and evaluate a digital story. Digital stories can be presented in different ways, such as personal narratives, which tell of an experience in the student's point of view to historical tales that take you on a journey through time. Teachers need to understand how to assess these stories. Many use observation and rubrics to show student understanding.

Digital Stories can take many forms. Students and many teachers use blogs, wikis, YouTube, Voice Thread, Podcast and social networks such as Facebook and Twitter to name a few. These technologies are used in and out of classrooms. Teachers need to take advantage of the technology students are using outside of school. By making this connection teachers can create YouTube videos with content to teach skills through a medium that students readily use both in and out of school (Drevon, Kerper and Landis, 2011). Teachers are able to create their own YouTube channel to provide a secure place for students to view educational videos and upload their own digital creations safely. Classroom Facebook pages and blogs can be used to collaborate and discuss topics both in and out of classrooms. These can be safely used if set up and controlled by the teacher. By using digital stories the connection is made between the technology students use outside the classroom and that in which they are using in the classroom (Ware & Warshauer, 2005).

Students, although most are technically savvy, cannot be expected to create these digital stories without guidance. Teachers not only need support but also need to provide

their students with support in all aspects of the creation of digital stories. A reminder that the message in the story is the most important part of the project is needed throughout the assignment. While working with gifted fifth grade students Kieler realized that the “Seven Elements of Digital Storytelling” developed by the Center for Digital Storytelling (2006) are key for a successful story experience. The Seven Elements concern:

- Point of View - What is the author’s perspective?
- A Dramatic Question – A Question that will be answered by the end.
- Emotional Content – Personal or powerful way to connect to the audience.
- The Gift of Your Voice – Personalize your story to help the audience understand.
- The Power of the Soundtrack – Enhance the story with music or sound effects.
- Economy – Don’t overload the story with information, use just enough to cover content.
- Pacing – How slow or quick the story progresses. (Center for Digital Storytelling, 2006)

Leaving out any of these steps can change the learning through the story, which can cause disconnect with the audience. Digital storytelling has an ability to create deeper learning for students, but if students and teachers just go through the motions of creating the emotion of the story will not be developed. Students need guidance to apply, analyze, evaluate, and create stories. A great benefit to students is to have teachers who have created their own digital stories and understand the elements of the story. Teachers must realize that to create stories which are effective and efficient in the classroom there must be more time taken for collaboration and discussion on how to create the mood, visuals, music, and voice effects of

the story (Kieler, 2010). When teachers share their stories they become real people not just teachers for their students (Roby, 2010).

As digital stories are being used more in the classroom there needs to be focus put on the content knowledge that is being focused on in the story. Robin (2008) introduced a Technological Pedagogical Content Knowledge theory, which helps to guide teachers with technological integration in their lessons. By using this framework teachers are able to create lessons that immerse students in 21st century learning and literacy skills. Making sure that teachers are not using technology for technology sake is important to think about when integrating any technology in the classroom. It is imperative that the seven elements of effective digital storytelling are followed in the classroom. Technology must not come before the story (Ohler, 2005). The story must still be the heart of the project.

Storytelling is not only important for student learning but also for teacher preparation (Roby, 2010). At a New York teacher's college, student-teachers were asked to create stories to connect their own lives to the classroom where they would teach. This allowed teachers to make a pedagogical decision about the use of digital storytelling in the classroom. When teachers believe in what they are using as tools to teach many times this excitement and enthusiasm for the project will carry to the students. The Content-Related Digital Storytelling Model (CoRDS) shows how digital storytelling can be absorbed in a pedagogical model to enhance the content and story (Roby, 2010). By introducing new content through discussion and reflection students and teachers are able to write stories to convey ideas. Before sharing stories students create digital stories that address the National Educational Technology Standards for Teachers (International Society for Technology in Education, 2008). Digital storytelling offers a way for students to be creative, collaborate,

use informational fluency, and understand how to be a good digital citizen. Subject matters, reflections, story writing, and digital adaptations are key parts of the CoRDS model. Having teachers develop instructional stories to use in the classroom not only improve the pedagogy but enhances professional development through reflection on shared stories by teachers and students (Roby, 2010).

“Digital storytelling is a technology that is well-positioned to take advantage of user-contributed content and to help teachers overcome some of the obstacles to productively using technology in the classroom” (Robin, 2008, p. 220). This statement emerged from the study of 22 teachers in all curriculum areas and levels who were working to introduce and merge digital storytelling into their curriculum. The data, which emerged from this study, concluded that digital storytelling should be considered to add value to the content of the classroom and is a powerful tool to develop 21st century skills and citizens.

Digital storytelling has the power to be an educational tool that drives 21st century learning. These personal narratives have been shown to increase literacy skills, enhance problem solving, improve listening, recall, and sequencing skills, empower students, increase success and raise global awareness (Roby, 2010). It also provides the opportunity to use many forms of technology in the classroom to reach outside the realm of entertainment with authentic, creative learning for students. Although Digital storytelling can be time consuming and overwhelming, when incorporated into the classroom with planning and purpose the results can be beneficial for all (Mullen & Wedwick, 2008). When you can, “capturing the student’s voice is the real power behind digital storytelling” (Banzsewski, 2002).

Conclusions and Recommendations

Storytelling has been a very important part of the learning process for children since the beginning of time. It is the history passed down from generation to generation through the telling of tales that has long since been a key tool for teaching language and writing. As teachers in a technological world, teaching digital natives, digital storytelling gives us the means to use technology to motivate and help those students who struggle with literacy while building 21st century literacy, thinking and technology skills. Technology is providing teachers with the medium, which allows students to use their literacy skills in a meaningful way. We all teach literacy in our classrooms no matter what our content area. Students' stories are no longer written for language arts; instead, they are used in science, math, social student, foreign language and technical subject areas, and their new audience is the world.

Engagement and Motivation

Does digital storytelling affect student engagement and motivation in the classroom? In today's classrooms student are bored with traditional teaching approaches. Engaging and motivating them to want to learn has become more difficult for teachers; however, digital storytelling gives teachers a new way to connect with the technological side of the students they teach. This technology drives students to become more active learners in classrooms and out. Digital storytelling examples can serve as a "hook" for those students who "tune us out". Digital storytelling gives students the opportunity to collaborate, interpret, problem solve, use critical thinking skills, show self- expression, investigate, analyze and evaluate while being engaged in classroom activities (Butler, et al, 2013).

Enhancing student motivation in the classroom can be difficult for teachers however the need for motivation is key to engaging students. Using stories allows students to modify

them with personal touches and take ownership and control of their learning thus make them more invested in their learning (Skinner & Belmont, 1993; Porter, 2005). Digital story telling brings to life the experiences of students. By giving them this voice teachers are able to see students increase their learning and creativity by actively engaging students in their stories. Students are able to visualize stories that are realistic and there for they can see the whole story clearly helping them to stay motivated to share it (Porter, 2005; Sadik, 2008; Xu et al., 2011). Students are able to develop projects, which show their individual creativity and innovation using the technology that motivates them instead of the traditional paper and pencil activities (Porter, 2005; Sadik, 2008; Kervin & Mantei, 2011). Digital storytelling in the classroom allows learning to become more student-centered, which in turn motivates students of various grade levels to demonstrate their knowledge in more creative ways (Robin, 2008; Lowenthal, 2008; Malin, 2010; Yang & Wu, 2012).

As teachers motivate and engage students in the classroom using digital storytelling they must surrender a great deal of control to the student. While guidelines and expectations are still needed a student-centered atmosphere is motivating to today's students. Teachers need to be guides for students in the process and provide assistance with the creation of the final projects. This starts with the modeling of stories and teaching them in some cases how to use the tools, but ultimately students will create their projects and take ownership in their work. By allowing students to take this ownership they are more engaged in the process of the assignments they are given (Sadik, 2008; Sylvester & Greenidge, 2009).

Teachers today need to move forward with technology and use it to enhance their classrooms. Today's students are digital natives and teachers must use the technology that motivates them to "hook" these students to become excited about their learning (Clemens &

Kreider, n.d.; Yang & Wu, 2012, Sylvester & Greenidge, 2009). When using multimedia tools, teachers are able to build 21st century literacy skills that students will need to be successful as adults in society. (Sadik, 2008; Sylvester & Greenidge, 2009; Campbell, 2010)

The enhancement of students' collaboration skills is also evident when using digital storytelling. The use of peer collaboration, teacher and student collaboration, and peer editing during project development and after allows students to analyze and develop better, more thoughtful stories. This collaboration leads to a classroom that functions more as a community of learners rather than individuals learning parallel to each other (Warren & Dondlinger, 2008; Sylvester & Greenidge, 2009; Xu et al, 2011, Yang & Wu, 2012). While building collaboration skills student effectively communicate with peers, teachers, the community, and the world; as social media and the Internet have stretched the audience that was once confined to the classroom community. This motivates students to create authentic stories with emotion and creativity. (Sylvester & Greenidge, 2009; Malin, 2010; Malita & Martin, 2010; Xu et al., 2011). As digital storytelling creates a more student-centered, collaborative and engaging learning environment, there is a positive the effect on students' critical thinking skills through the dramatization, creativity, and real world connections that are used to create these digital stories (Wright et al., 2008; Sadik, 2008; Xu et al, 2011; Warren & Dondlinger, 2008)

Literacy Skills

There is an ample amount of evidence that using digital storytelling in the classroom will improve students' literacy skills. Although the way literacy is viewed is changing the expectation of traditional literacy is still key to literacy. Digital storytelling encompasses traditional literacy skills with 21st century literacy skill to improve overall literacy skills in

the classroom. This combination of literacy skills while focusing on reading, writing and speaking motivates students with 21st century literacy skills important for living in society today (Ohler, 2005; Robin, 2008).

Students are expected to know how to form a topic, write, edit and publish a story as part of their literacy learning. The use of digital stories help with all of these required areas. Literacy in the common core has also become so much more than reading and writing. Students are asked to use the 21st century literacy skills of Digital Literacy, Global Literacy, Technology Literacy, Visual Literacy, and Information Literacy across curriculum areas to prepare for success in the real world. Digital storytelling can be one way to meet all of these standards. Struggling writers are able to use digital literacy, technology literacy and visual literacy to enhance their learning and stories by using story mapping is a key concept to any story but adding digital and visual elements give the story a deeper meaning. Taking this art of storytelling and digitizing it excites students and encourages development of all literacies (Ohler, 2005; Robin, 2008; Sylvester & Greenidge, 2009; Meier, 2014).

How are these new literacies evident in digital storytelling? Digital Literacy is enhanced through digital storytelling through collaboration and peer editing, students are encouraged to address issues in their writing and deliver their story (Robin, 2008; Sylvester & Greenidge, 2009; Meier, 2014). When producing a digital story, students strengthen their technology literacy skills by using multi-media devices to improve, create and produce their story for an audience. This technology motivates struggling writers and improves literacy skills (Robin, 2008; Sylvester & Greenidge, 2009). Understanding how to use images, sound and voice to produce an emotional story demonstrates how students develop visual literacy skills while creating digital stories (Sadik 2008; Sylvester & Greenidge, 2009). When

creating a digital story, students must use information literacy skills to research, evaluate, analyze and synthesize information for their stories (Meier, 2014).

Even to communicate through technology, reading and writing is still an essential part of the process. Digital storytelling adds to this foundation of traditional literacies by adding images, music, and voice to the skeleton of yesterday to help students express information, ideas, and experiences to an audience that has become much greater than that in the classroom. Students are asked to create stories not to complete an assignment for the teacher but to complete a story that will touch the world.

Across Curriculum Integration

Can digital storytelling be used across the curriculum? After reviewing the literature I believe that digital storytelling can be effectively used across curriculum areas to engage, motivate, and teach students. Although the focus is on a story which many think is a language arts only skill, the Common Core Standards address the need to have students immersed in reading, writing, speaking, and listening across many content areas (Common Core State Standards Initiative, 2012). Digital storytelling can enhance second graders' math learning (Butler, Maond-Amaya & Yoon, 2013), culture learning in social studies classes (Burnett et al., 2006), to learn about the present and the past (Malita & Martin, 2010), in high school foreign language classrooms (Castaneda, 2013), to meet the needs of struggling writers (Sylvester & Greenidge, 2009), and in science classrooms to show processes in authentic ways (Sadik, 2008). In all content areas we teach and use literacy, which makes digital storytelling an effective tool to use with students.

The key to making digital storytelling an effective classroom tool is to have teachers who are willing to learn about and integrate the technology needed to create these stories into

their classrooms. This goes beyond word processing and basic computer skills. There is a need of teacher training with the technology needed to complete the projects. Teachers need to create and model the projects they are offering the students (Butler, Monde-Amaya, & Yoon, 2013). Teachers can also model by using YouTube, which is an interest to most students today (Mullen and Wedwick, 2008).

Recommendation

This review has found that there is a fair amount of research done on digital storytelling at all levels with the majority of research completed in the area of language arts classrooms. It would be beneficial to have more research done on digital storytelling across the curriculum. If the movement is to enhance elementary classrooms by using technology, more research is needed to motivate teachers to use digital storytelling with young children. Elementary students are digital natives and are very comfortable using technology to learn, create and share; thus the need for more teacher training in this area.

Recommendation for Teachers

Integrate digital storytelling across the curriculum areas at all levels, and enhance collaboration between students in two different classes, schools, and even countries. Take time to experience digital storytelling so modeling can be done for students. Encourage students to publish their work online and continue to develop stories overtime. Teachers can conduct action research to disseminate their results to influence other teachers to implement the use of digital storytelling into their classrooms.

Recommendations for Administrators

Provide professional development opportunities for teachers to learn and develop the craft of digital storytelling. Provide technical support for teachers as they work to implement new technologies into their classrooms.

Conclusion

After completing this review, I have shown that the evidence strongly supports that, when used correctly, digital storytelling can have great benefits in the classroom at any level in any content area, and across the curriculum. Digital storytelling can be used in math, social studies, science, and foreign language classrooms to help students develop and improve academic skills. Students who struggle with writing skills are able to improve not only writing skills but also 21st century skills. The use of 21st century skills is engaging and motivating to students and gives them control of their learning. The digital world we live in allows students the ability to showcase their learning beyond the classroom through the use of digital stories.

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