Writing in the Digital Environment: Pre-service Teachers’ Perceptions of the Value of Digital Storytelling

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Abstract  Digital storytelling is an expressive and culturally authentic form of representation that integrates narrative writing with digital technology. Pre-service teachers develop planning skills, learn to understand the relationship between words and images to convey meaning, and come to value digital technologies as tools for thinking, learning, and sharing ideas as they construct digital stories. This study used a qualitative research paradigm to explore pre-service teachers’ perceptions of the value of adding a digital storytelling project to a writing intensive childrens literature course. Results indicated that pre-service teachers valued the digital storytelling project as a model for teaching the writing process in the digital environment, as a method for self expression and for sharing stories within a community of learners, and as a strategy for integrating digital technology in the classroom. Results also indicated that participating in the digital storytelling project increased pre-service teachers’ understanding of the connection between the planning process in the text-based environment and the planning process in the digital environment and the relationship between words and images to convey meaning.

Key words  Digital storytelling · Pre-service education · Technology integration
Introduction

Emphasis on state mandated and ISTE/NETS standards in pre-service education requires educational institutions to prepare pre-service teachers to be effective users of digital technology. Pre-service teachers must learn digital technology skills and also develop a valuing for digital technologies and an understanding of how to utilize digital technologies as tools for teaching and learning. “Technologies should not support learning by attempting to instruct learners, but rather should be used as knowledge construction tools that students learn with, not from” (Jonassen, Carr & Yueh, 1998, p. 24). The focus should be on teaching with technology; not teaching about technology (Russell, Bebell, O’Dwyer, & O’Connor, 2003). Technology integration is most successful when pre-service teachers view work as authentic, meaningful, and directly linked to instruction (Collier & Veres, 2006; Sadik, 2008).

Digital storytelling is a transformational approach to storytelling that shifts traditional storytelling into the 21st century environment of digital technology. Digital storytelling is an adaptation of oral storytelling; it utilizes multimedia and telecommunication tools to engage students in authentic learning experiences that provide real world relevance and personal value to the learners within a situated context (Bruner 1996; Brown, Collins, & Duguid, 1989; Kearney & Schuck, 2006; Emihovich & Lima, 1995; Lambert, 2006).

Digital storytelling falls within the constructivist paradigm of project-based learning, a student-centered model that organizes learning around authentic projects or complex tasks. Teachers serve as facilitators to learning and act as guides to experience,
not deliverers of information (Jonassen, 1991). In a constructivist environment, learning is considered to be a building process in which knowledge is actively constructed by students within a social context. “Learners construct their own reality or at least interpret it based upon their perceptions of experiences, so an individual’s knowledge is a function of prior experiences, mental structures, and beliefs that are used to interpret objects and events” (Jonassen, 1991, p.10).

As pre-service teachers construct digital stories, they develop planning skills, learn to understand the relationship between words and images to convey meaning, and come to value digital technologies as tools for thinking, learning, and sharing ideas. Storytelling is not a new pedagogical approach, but the potential of digital storytelling to open new possibilities for teaching students to write effective narratives and to utilize computers to construct knowledge and communicate globally makes it a meaningful strategy for teaching and learning in the 21st century.

Review of Literature

Digital Storytelling as a Method to Construct Knowledge

Bruner (1991) states that stories are about human experiences: actions, events and conflicts that occur over time. Stories are the way in which human beings communicate meaning and construct an understanding of the world (Bruner, 1996). Stories serve as avenues to personal experience, and they are the way that human beings make sense of the world and create a personal reality (Schank, 1990; Bruner, 1987, 1991; Davis & Waggert, 2006).
Individuals construct stories through the process of reflection on experience (Boase, 2008; McDrury & Alterio, 2003; Schank, 1990; Connelly & Clandinin, 1990; Boud, Keogh, Walker, 1985). Storytelling serves to reinforce and magnify a student’s ability to reflect on experience and personal growth (Lathem, Reyes and Qi, 2006; Linde, 1993). Reflective writing includes self-assessment and pushes the writer to deeper self-knowledge (Davis & Waggert, 2006). Lehr (1995) says that the heart of the writing process is reflection and revision. Through the process of writing, reflecting, and revising, the writer develops and clarifies ideas.

According to Vygotsky, the ability to inquire or reflect is learned by students through shared activities with peers and adults. Concepts develop and understanding occurs when students take part in discussions and meaningful interactions with more capable peers or adults who are able to model problem solving and assist students in finding solutions. These thinking processes, which utilize psychological tools such as language, symbols, images, writing, mapping, selecting, comparing, and categorizing are internalized by the students and become part of their cognitive development (Vygotsky, 1978).

Narratives serve as a set of interpretive procedures for considering departures from norms that are meaningful in terms of established patterns of beliefs. Stories achieve meaning by explaining deviations from the expected in a comprehensible form (Bruner, 1991). Creating narratives is a kind of causal thinking in which the narrator seeks to fit experiences into some form of narrative schema (Robinson & Hawpe, 1986). Scholes (1981) states that a story has a specific syntactic structure: beginning-middle-
end or situation-transformation-situation and must contain three basic elements: a situation that involves a conflict or predicament; an animate protagonist who engages in the situation for a purpose; and a sequence with implied causality during which the predicament is resolved (as cited in Carter, 1993).

Carter (1993) proposes story as a mode of knowing in contemporary research on teaching and teacher education. Carter states “story is more than simply a rhetorical device for expressing sentiments about teachers or candidates for the teaching profession. It has become a central focus for conducting research in the field” (Carter, 1993, p. 5). Carter points out that expert teachers have a rich store of situated knowledge of curriculum content, classroom social processes, academic tasks, and students' understandings and intentions while novice teachers often struggle to make sense of classroom experiences. Carter indicates that this struggle with events shapes novice teachers’ knowledge of teaching in fundamental ways as they write their own stories about teaching and learning. In her research, Carter attempts to understand the interpretive structures that novice teachers use to organize their knowledge of teaching through analysis of well-remembered events that occur in the school environment. According to Carter, a well-remembered event is an incident or episode that a student observes in a school situation and considers especially memorable; a short story from a novice teacher’s stream of experience (Carter, 1993).

Digital storytelling integrates the art of storytelling with modern technology (Lathem, 2005). “Digital storytelling, just like storytelling in generations past, allows individuals to share their knowledge and experiences with others by telling a story”
Digital storytelling is a creative, reflective, multimedia narrative edited on a computer, using still images, voice, video, music, and sound to communicate with an audience (Lambert, 2005, Paull, 2002). “Meaningful storytelling processes incorporate opportunities for reflective dialogue, foster collaborative endeavors, nurture the spirit of inquiry, and contribute to the construction of knowledge” (Alterio, 2002, p. 3). Unlike oral stories that are subject to varying interpretations and emphasis, digital stories become permanent artifacts that capture a specific moment in time, one telling of an experience, and stand as objects for personal reflection and critique (Lathem, Reyes, & Qi, 2006).

**Integrating Technology Training in Pre-service Education**

Mergendollar (1996) states, “While technological tools can spur pedagogical changes, the utility of such changes must be measured ultimately by their impact on student learning” (p. 45). The goal of teacher education is for pre-service teachers to be able to meaningfully use technology to support their curriculum and view technology as an integral part of teaching, an effective way to deliver curriculum; not as a separate component (Robin, 2006, Woodbridge, 2004). Effective technology integration engages students in learning and constructing knowledge through the utilization of meaningful activities that were not available before digital technology was introduced (Dexter, Anderson & Baker (1999); Trilling & Hood (1999); Sadik (2008).

During the past decade, schools have invested heavily in acquiring computer-based technologies. The educational benefit of this investment can only be realized if pre-service teachers are prepared to use computers for instructional purposes (Russell, et
al., 2003). Universities must provide pre-service teachers with opportunities to learn technology skills and also guide them to develop a valuing for technology and an understanding of how to utilize technology as a tool for learning and teaching (Collier & Veres, 2006, Hughes, 2005).

A 1999 survey by the Milken Family Foundation and ISTE indicates teacher-training programs, in general, do not provide pre-service teachers with adequate training to prepare them to use technology effectively in the classroom. Findings suggest that formal stand-alone instructional technology coursework does not correlate well with technology skills and the ability to integrate technology into teaching. The report recommends that teacher preparation programs should increase the level of technology integration within specific academic programs (Milken Family Foundation, 1999). Pope, Hare & Howard. (2002) agree that the knowledge and skills that pre-service teachers acquire in a basic computer course do not prepare them to integrate technology into their teaching practice. The opportunity for pre-service teachers to be exposed to new technologies while learning teaching practices in their methods courses and seeing the technologies modeled by faculty increases pre-service teachers’ levels of confidence in utilizing technology (Pope et al., 2002; Adamy & Boulmetis, 2006, Brown & Warschauer, 2006). Teacher education programs must provide pre-service teachers with the opportunity to learn practices that allow them to integrate technology with teaching methods. “The technology experiences that pre-service teachers receive will help to determine the extent to which they use technology in the classroom” (Pope, et al, 2002, p. 202).
Russell et al., (2003) state that changing teachers’ use of technology requires changing their beliefs about technology. During pre-service training, students should be exposed to a wide variety of technologies and ways to use technologies to support instructional goals. Hughes (2005) states that the ability to develop innovative technology-supported pedagogy lies in pre-service teacher’ interpretation of the newly learned technology’s value for supporting instruction and learning in the classroom.

**Digital Storytelling to Incorporate Technology in Pre-service Education**

Bishop (2009) explored the use of digital and multimodal compositions to engage pre-service teachers in using digital literacy skills and to foster the construction of their teacher identities and sense of authorial agency in an elementary education language and literacy methods course. Digital literacy skills can be broadly defined as “the ability to read and interpret media (text, sound, images), to produce data and images through digital manipulation, and to evaluate and interpret new knowledge gained from digital environments” (Jones-Kavalier & Flannigan, 2006, p. 8). Bishop asserts that engaging in digital and multimodal design provides “a compositional space for pre-service teachers to prepare for the authoritative discourses that they will likely encounter in schools by fostering an increased awareness of the cultural multiplicity they bring to the design and production of texts” (Bishop, 2009, p. 32). Designing personal narratives using multiple modes (text, audio, still images, video) allows students to represent their thinking in ways not usually include in a literacy methods course and to reflect on differences in how these modes function regarding representation of self.
Mayer (1997) suggested that information provided both visually and verbally has a stronger impact on learning than information provided separately. When images accompany the recorded narrative, the learner performs dual coding by selecting and organizing both the visual and verbal information together in working memory to better understand the information provided (Blocker, 2008). According to Bishop (2009), designing a digital story provides a literacy opportunity that extends beyond print-based academic work. Digital stories attempt to bridge students’ personal experiences with both traditional and multimodal composition with their developing ideas about how personal learning and future classroom instruction might be approached (Bishop, 2009, p. 33).

Benmayor (2002) engaged students in a multicultural education class, “Latina Life Stories,” in producing digital stories as a medium of empowerment, a system of representation, and as a pedagogical tool. Students read and analyzed autobiographical writings of Latina authors; then produce their own autobiographical digital stories. According to Benmayor (2003), students became more aware of individual identity and personal voice as they reacted to literature and cultural theories and constructed digital stories. Benmayor (2002) found that this was the first time for many students to consider their lives as embodying larger social forces, theories, and identities. “The digital story project provides a context for sharing experiences and an opportunity for thinking about identity, ethnicity, and culture” (Weis, Benmayor, O’Leary, Eynon, 2002, p. 5). Benmayor views digital storytelling as a democratic publication format that allows new
voices to emerge as stories are shared with family, community audiences, and globally through Internet.

Heo (2009) examined the effects of designing a digital story on pre-service teachers’ confidence about technology use and attitudes towards implementing technology in a future classroom. “Exposing pre-service teachers to effective educational technology early in their learning can have a critical impact on their long-term development toward technology efficacy” (Heo, 2009, p. 410). Digital storytelling is a useful approach to multi-media based educational technology since the digital storytelling process can be learned in a relatively short time period (Lasica, 2002). Pre-service teachers in this study watched a thirty minute video-based tutorial on designing a digital story using Photo Story 3. They were then asked to create a digital story over the next week responding to the prompt “Why I want to be a teachers.” Results indicated that pre-service teachers’ self-efficacy toward educational technology was greatly improved by participating in the digital storytelling project. In addition, the study showed that participating in the digital storytelling project advanced pre-service teachers openness to adopt new forms of educational technology. “When pre-service teachers become competent in and have an open mind toward educational technology, their likelihood of integrating technology in classrooms increases” (Heo, 2009, p. 423).

Chung (2006) integrated digital storytelling into a pre-service visual arts education class as a strategy to teach contemporary visual culture and expand the technology skills and knowledge of students to teach interdisciplinary arts and humanities. According to Chung, the process of making a digital story takes arts
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education students beyond simply making art for its own sake. For a digital story to make sense, it must include contextual meanings to which the audience can relate.

Chung (2006) emphasized the use of the storyboard as a planning tool in the construction of a digital story. Chung stated that storyboarding is the process of visualizing how a digital story will look. Storyboarding involves planning the sequence of scenes as well as the interaction of the incorporated media components (Chung, 2006, p. 40). Digital storytelling provides an effective strategy for integrating content, teaching life issues, and for creating postmodern works of art (Chung, 2006, p. 36).

Butler (2010) looked at changes in teachers’ attitudes toward technology integration after completing a three day training session on developing digital stories. According to Butler (2010), the use of technology in the classroom is affected by teachers’ negative attitudes toward technology and computers (Okojei & Olinzock, 2006 as referenced in Butler, 2010). This study used a Stages of Concern Questionnaire to measure change in teachers’ attitudes over the training period. Results indicated that teachers’ level of apprehension about managing the implementation of a new technology innovation in the classroom significantly declined as a result of working through the digital storytelling process in a supported workshop environment.

Blocher (2008), drawing on the work of Barrett (2007) on portfolio as story, reported on the effectiveness of digital storytelling as a performance assessment of pre-service teachers’ attitudes and dispositions within an e-Portfolio system for NCATE accreditation. According to Blocker (2008), embedding digital storytelling within course instruction provided an effective strategy for students to enhance their technology

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skills and also afforded them an opportunity to reflect on their learning as they moved through teacher preparation courses. Interviews with faculty supplied feedback on the use of digital storytelling with pre-service teachers. Some faculty commented that digital storytelling was easy to learn, but the construction process was time intensive. Others shared that learning more complex technology skills enabled pre-service teachers to see how they might use digital storytelling in lessons in a future classroom. Faculty also reported that the most difficult part of the digital storytelling process was topic selection and locating appropriate images. Feedback from students indicated that the digital storytelling project was both rewarding and challenging. Blocker (2008) stated “the use of this technology provided students with the opportunity to engage in a learning activity that was reported to be meaningful, satisfying and where their end product was something that they were eager to share” (Blocker, 2008, p. 897).

Sadik (2008) looked at possible shifts in teachers’ technology utilization as a result of participating in training on the digital storytelling construction process using Photo Story 3 and the impact on student learning and engagement when teachers implemented the digital storytelling process in the classroom. Sadik evaluated students’ performance in digital storytelling in order to investigate students’ level of engagement in an authentic task that required them to develop, present, and share digital stories. Data obtained through interviews with teachers during and after implementation of the digital storytelling project indicated that teachers were concerned about the amount of time required to plan and prepare lessons using a storytelling approach. They were also uneasy about the quality of student work and questioned whether students were actually
connecting story ideas to lesson objectives. On a positive note, teachers did indicate that constructing group digital storytelling projects “enriched the classroom learning environment, the curriculum, and the student learning experience by providing an open-ended, creative and motivating productive tool in the classroom” (Sadik, 2008, p. 502). Teachers said that the digital storytelling project motivated students to use technology production tools such as computers, digital cameras, and the Internet to develop their stories.

Sadik assessed students’ projects using a Student Digital Story Evaluation Rubric (Sadik, 2008, p. 500). Results indicated that students were successful with their projects and their projects met many of the pedagogical and technical criteria of digital stories; however, Sadik questioned whether students’ actually connected the point of their stories with content objectives in history, science or language arts. According to Sadik (2008), students had most difficulty with timing between the audio track and images. Findings indicated that the digital storytelling project encouraged students to consider the meaning of a story and to clarify understanding of the topic during the process of developing the digital stories. “Students reflected on their own thoughts and engagement with the subject, both visually and aurally (Sadik, 2008, p 502).

Methods

Research Questions

This study attempts to understand pre-service teachers’ perceptions of the value of adding a digital storytelling project to the curriculum of a writing intensive children’s
literature course. The digital storytelling project shifted the writing process from a text-based format to the digital environment that added visual and auditory components to the writing process and led students through an iterative, reflective cycle to develop a digital artifact that could be shared with an audience and also reflected on and evaluated by the author. Therefore, this study attempted to answer the following questions:

1. What aspects of the digital storytelling project result in pre-service teachers valuing digital storytelling as a method to teach writing and support instruction and learning in the classrooms?

2. How does engaging in a digital storytelling project help pre-service teachers’ to better understand of the connection between the planning process in the text-based environment and the planning process in the digital environment?

Participants

Participants in this study were pre-service teachers enrolled in two sections of an early childhood education course, *Teaching Reading through Children’s Literature* at Texas A&M University (n = 67). The majority of these students were junior and senior early childhood education majors, although some students were secondary social studies or English majors. Pre-service teachers were predominately Caucasian (n = 61), with a small number of African American students (n = 2) and Hispanic students (n = 4). A majority of the pre-service teachers were female (66 female, 1 male; mean age = 21).

Program Description

Research took place in a one-semester introductory children’s literature course designed to prepare pre-service teachers to teach critical reading, language arts, and
children’s literature. The course was project-based and emphasized both competent writing skills and effective methods to teach writing to early childhood - 4th grade students. The digital storytelling project took place over a four week period. The instructor and the researcher conference with students in class to help with story editing and in the computer lab in two four hour afternoon sessions and in the evening by appointment during the production phase of the digital stories. The final class period of the project was used to view the digital artifacts as they were presented in the classroom. This research took place in a naturalistic setting, the classroom. The researcher took the role of participant-observer during the four week period of the digital storytelling project which allowed for interaction with pre-service students during the digital story construction process and for viewing all completed digital artifacts.

**Project Implementation**

The digital storytelling project was the culminating project of the semester. The project drew on knowledge from prior projects: picture story books and oral storytelling methods, literary elements and narrative structure, and the reading/writing workshop process. The digital storytelling project endeavored to shift the application of this prior content knowledge into the digital writing environment and engage pre-service teacher in the development of a meaningful project that integrated digital technology with narrative writing and demonstrated how digital technology can be effectively utilized in the classroom.

The course was writing intensive; therefore the initial focus of the digital storytelling project was on effective narrative writing, not on a discussion of technology.
skills or software applications. The digital storytelling assignment as stated in the course syllabus:

Technology continues to become a critical tool in our society. As a result, it is impacting many areas of learning including both pedagogy and literature. You will be required to author a script (250-500 words maximum) and create a digital story/movie of your script using pictures, photographs, or another visual medium. Special attention will be given to your use of voice, purpose, and audience as well as the literary elements (plot, setting, characterization, conflict, author’s style, and theme).

The digital storytelling writing task required pre-service teachers to compose a personal narrative in first person present tense in response to writing prompt. Write a 200-500 word personal narrative that represents a well-remembered event in your life. The personal narrative became the basis for the digital story. During the writing phase of the project, the instructor and the researcher conferenced with students in class to help them edit and refine their personal narratives. After students completed the writing task, they recorded their stories, with the help of a lab assistant, using Audacity, a free software program for capturing and editing audio. The recorded narrative established the framework for the digital story and shifted narrative writing into the digital environment.

Prior to the first class, students were required to read the short personal narrative Eleven by Sandra Cisneros and analyze the story in terms of the literary elements (plot, setting, characterization, conflict, author’s style, theme). The instructor led a discussion of the story in class as a review for the digital storytelling project. Students were also provided with a rubric as a guide to the project requirements as shown in Appendix 1. This rubric was designed by the instructor and used by the instructor to grade the digital story projects as they were shown during the final class period. In keeping with the

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reading/writing workshop approach, three structured mini-lessions were presented in class by the instructor over three class periods.

1. **What is a story?**
   - Reviewed the definition of story and the literary elements
   - Used a structural plot model to demonstrate story structure
   - Illustrated story structure using the short story example

2. **Using a Storyboard: Linking Narrative to Image to Tell Your Story**
   - Showed a storyboard template
   - Displayed a completed storyboard
   - Discussed how a storyboard helps to link narrative segments to images
   - Presented the digital story constructed using the storyboard

3. **Making a Digital Story in Window Movie Maker**
   - Showed two examples of digital stories
   - Demonstrated adding the recorded audio and music to the movie track
   - Demonstrated inserting images in the movie track and controlling timing
   - Explained the publication process in Windows Moviemaker

Students were required to use a storyboard as a planning tool in the construction of the digital story. Chung (2006) states that the storyboard is a planning tool that helps students efficiently organize the development or evolution of a story and keeps the story focused in terms of timing, imagery, audio, and music. Students were provided with a storyboard template and given the option to use a digital storyboard in Microsoft Word format. Students were given the choice to draw images, use personal photographs and
video, or locate appropriate images on the Internet using key word searches. Emphasis was placed on selecting images that extended the meaning of the narrative and supported the structural development of the story.

The instructor presented the mini-lesson on constructing a digital story using Windows Movie Maker 2.6 after students completed the narrative writing task. She also showed examples of digital stories designed by other pre-service teachers to illustrate how recorded narrative links to visual representations to extend the meaning of words. Students received a one page handout, designed by the researcher that provided a step-by-step guide to the technical construction process for a digital story as shown in Appendix 2. Students in a pilot project indicated that the handout served as an excellent guide to the construction and publishing process. Based on experience from the pilot project, the researcher determined that discussion of technology and the digital construction process should not occur until the narrative writing task was completed. Initial showing of digital story examples and discussion of the technical construction process seemed to lead students to focus on locating images or photographs, rather than concentrating on effective narrative writing. The resulting projects were slide shows; not well written stories about a meaningful personal event.

**Research Design**

This study used a qualitative research paradigm to look for emergent patterns in pre-service teachers’ perceptions of the value of adding a digital storytelling project to the curriculum of a writing intensive children’s literature course. The two classes remained intact. All students received the same intervention as the researcher wanted to
understand changes in attitude of individual students due to the introduction of the
digital storytelling project; not group differences.

**Data Sources**

**Experience with Digital Technology Applications Survey.**

At the first class that related to the digital storytelling project, pre-service teachers responded to an Experience with Digital Technology Survey as shown in Appendix 3 to assess their entry level experience with digital technology applications at the start of the project. Students were asked to rate their experience level with digital applications on the basis 1 to 5 with 1 representing no experience and 5 representing a significant level of experience. No technology component was included in the course prior to the digital storytelling project. The digital storytelling project was the only project that required students to employ digital technology application beyond word processing and presentation software; thus the researcher wanted to understand pre-service teachers’ self-reported level of experience with digital technology applications prior to any discussion of digital storytelling methods.

**Pre-post implementation survey questions.**

At the first class that related to the digital storytelling project, students responded to two questions in a short paragraph of three to five sentences.

1. Describe the planning process that you use when you are working on a writing assignment.

2. Why is it important to integrate digital technology training into pre-service education?
Pre-implementation survey questions explored pre-service teachers’ views prior to beginning the digital storytelling project about the use of a planning process in a writing assignment and the importance of technology training in pre-service education.

At the start of the final class that related to the digital storytelling project, students responded to three additional questions.

1. Describe the planning process that you used to design your digital story.

2. How did the use of a storyboard support your thinking as you combined your narrative with images to create a digital story?

3. How do you anticipate using digital storytelling with students in a classroom?

Post-implementation survey questions 1 explored how pre-service teachers used the writing workshop planning process in the construction of a digital story. Questions 2 explored how students used the storyboard as a planning tool to design the digital story. Question 3 looked at students’ valuing of digital technology as a method to teach writing and integrate digital technology in the classroom. The researcher wanted to determine if pre-service teacher valued digital storytelling and the technology training in the project enough to suggest how they might use the digital storytelling project in a future classroom.

**Reflection questions.**

Prior to the final class period, students were asked to post responses to two reflection questions on the class web site. The purpose of the reflection questions was to engage pre-service teachers in thinking about the value of the digital storytelling project as a teaching and learning strategy.
1. How did engaging in the digital storytelling project change the way you feel about teaching the writing process in the digital environment?

2. What did telling your digital story mean to you?

The researcher wanted to understand how students perceived personal changes in attitude related to teaching the writing process in the digital environment that may have occurred due to the implementation of the digital storytelling project.

**Individual interviews.**

At the conclusion of the digital storytelling project, the researcher invited all students in both classes to participate in interviews related to the digital storytelling project. Interviews were planned to last no more than thirty minutes since the interviews were being conducted during the week just prior to final exams, and students were concerned about study time. Interviews used a semi-structured script to provide consistency in data collection. Interview questions focused on differences that students experienced when they moved from writing in a text-based format to writing in the digital environment that adds visual and auditory components to the writing process and results in a permanent artifact that can be shared with others and also reflected on and evaluated by the author. Specific areas of interest in the interview script included the writing workshop planning process, understanding of the relationship between words and images to convey meaning, valuing of the digital storytelling project as a teaching and learning strategy, and plans for using digital storytelling in the classroom.

Fourteen students initially volunteered to be interviewed; however, twelve students actually participated in the interview process. The twelve students constituted a
purposeful sample, students who were willing to participate in a semi-structured discussion of the digital storytelling process and the impact of sharing a digital story with an audience (Patton, 1990 as referenced in Hoepfl, 1997).

Interviews were digitally recorded and transcribed by the researcher. The researcher sent each participant a copy of the transcribed interview by e-mail as a member check. The researcher asked students to read the interview transcript and report any misrepresentations. All students who replied indicated that the transcription fairly represented what was said during the interview. Names used in this study are pseudonyms to protect the privacy of pre-service teachers who were interviewed.

**Story drafts, storyboards, and digital artifacts.**

The researcher acted as a participant-observer during the digital storytelling project and was present when the digital stories were shown in class. The researcher also had access to the class website where story drafts were posted and to the storyboards and digital artifacts for review.

During the interview process, the researcher showed each student’s digital story as a basis for discussing the narrative, story structure, and the use of images to extend the meaning of words. Bishop (2008) referred to this technique as multimedia elicitation, asking each pre-service teacher to view and respond to his or her own digital story (p. 38). Patton (2002 as referenced in Bishop, 2009) described this as a projection technique in qualitative research: one that allows the participant to react to something other than a question. Viewing the digital stories with participants established a *mutual visual*
context’ for discussion that both the researcher and the pre-service teacher could respond to (Taylor, 2002 as referenced in Bishop 2009).

**Data Analysis Methods**

**Experience with Digital Technology Applications Survey.**

Students’ self-reported entry level of experience in each digital technology application was totaled and averaged to provide an overview of the groups’ level of experience with digital technology applications at the start of the digital storytelling project (n=64).

**Pre-post implementation questions, reflection responses, interview data.**

The researcher used emergent coding and employed the causal-comparative method of data analysis to categorize and analyze the pre-post implementation survey questions, the reflection responses, and the transcribed interviews to look for patterns and themes that may result in grounded theory (Glaser & Strauss, 1967; Riessman, 1993; Merriam, 1998). All data analysis was conducted by the researcher.

Each student was assigned an identification number, and all data were coded to protect student identity. The implementation survey questions, the reflection responses, and the individual interviews with study participants served to triangulate data sources; thereby increasing contextual validity (Diesing, 1972, p. 147-148 as referenced in Lincoln & Guba, 1985). Review of the digital artifacts and the storyboards served to triangulate interview data related to story structure and the use of images to extend the meaning of words.

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Results

Establishing a Digital Technology Context for the Study

Experience with Digital Technology Applications Survey.

The Experience with Digital Technology Applications Survey reported pre-service teachers’ average level of experience with digital technology applications. Results of the survey, as reported in Figure 1, indicated that pre-service teachers entered the digital storytelling project with a range of digital technology applications experience. Pre-service teachers reported the highest level of experience with word processing software followed by presentation software and spreadsheet applications. They also indicated a high level of experience with locating images on the Internet, downloading digital music from the Internet, and the use of a digital camera. Lowest reported levels of experience were with digital technology applications that are used to construct a digital story such as audio recording, and video editing.
Figure 1
Pre-service teachers’ average level of experience with digital technology applications. n=64

<table>
<thead>
<tr>
<th>Application</th>
<th>Experience Level</th>
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<tbody>
<tr>
<td>Word Processing</td>
<td>5.5</td>
</tr>
<tr>
<td>Locating Internet Images</td>
<td>5.2</td>
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<tr>
<td>Digital Camera</td>
<td>5.2</td>
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<td>Digital Music</td>
<td>5.1</td>
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<tr>
<td>Presentation Design</td>
<td>5.1</td>
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<tr>
<td>Spreadsheet</td>
<td>4.7</td>
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<tr>
<td>Digital Scanner</td>
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<tr>
<td>Photo Editing</td>
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<td>Audio Recording</td>
<td>2.4</td>
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<tr>
<td>Video Editing</td>
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</table>

**Interview data related to experience with digital technology.**

Of the twelve pre-service teachers who participated in the interview process, all indicated that they had previous experience with word processing using Microsoft Word and presentation design employing PowerPoint. Three students mentioned learning to use Excel, a spreadsheet program, in a statistics class. One student talked about having experience with photo editing, and one reported prior experience with audio recording. Four students reported that they had used Windows Movie Maker to design a short video.
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documentary in another education class. None of these pre-service teachers indicated that they had ever written and constructed a digital story.

**Attitude toward integration of technology training in pre-service education.**

Pre-implementation question 2 asked why it is important to integrate technology training into pre-service education. Responses indicated that pre-service teachers included in the study held a positive attitude toward the idea of integrating digital technology training in the pre-service education. 100% of pre-service teachers indicated that including technology training in the pre-service education curriculum is important.

Approximately 70% indicated that pre-service teachers must learn technology skills in pre-service education in order to be prepared to successfully integrate technology in the classroom.

Children love technology, and I don't know how to use it.

It is important for us to learn technology, so we can teach our students. They are growing up in a world of technology. We need to know about it.

I am more than willing to use technology in my classroom as long as I know how to use it. Technology needs to be in the classroom. If I learn how to use the technology now, it will be much easier to incorporate it into my classroom later allowing for a smoother transition.

Approximately 30% pointed out that students in the 21st century live in a world of technology, and pre-service teachers must be able to effectively relate to students who view technology as a part of their daily lives and are already comfortable using technology in multiple formats.

Technology is taking over! Children in our classes most likely love technology and will be more involved if we use it in the classroom.

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Technology is the new way! The students who are going to be in my classroom will have far surpassed the technology wave. They are probably more into it than me! It makes learning the more fun!

Technology surrounds us daily. It is important for students to feel comfortable with technology at a young age in order to be successful with it as an adult.

**Research Question 1**

The first research question asked what aspects of the digital storytelling project resulted in pre-service teachers valuing digital storytelling as a method to teach writing and support instruction and learning in the classroom. Analysis of reflection responses and interview data indicated that pre-service teachers valued the digital storytelling project as a model for how to teach the writing process, as method for self-expression and for sharing stories within a community of learners, and as strategy for integrating digital technology into the classroom.

**Digital Storytelling as a Model for Teaching the Writing Process**

As pre-service teachers engaged in writing personal narratives and constructing digital stories, they came to value the digital storytelling project as a model for how to teach the writing process. Pre-service teachers came to understand the benefit of peer review by participating in the on-line virtual storytelling circle where students provided peer feedback on story drafts and shared story ideas. Conferencing with the instructor through e-mail and during the class period helped pre-service teachers edit and refine their written narratives and allowed them to experience the interventionist conferencing model as students. Engaging in the digital storytelling project also allowed pre-service teachers to consider how they might apply these methods in a future classroom.

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Valuing the writing process.

Reflection questions I asked pre-service teachers how engaging in the digital storytelling project changed the way you feel about teaching writing in the digital environment. Pre-service teachers said that the digital storytelling project made them more aware of the value of the writing process. They also indicated that the project motivated students to write and share their work with others.

Digital storytelling enhances all parts of the writing process. Before I always saw writing as something you just kind of do to turn in and get a grade. The teacher is the only person who really cares to read what is written. With digital storytelling, every part of the writing process matters. Doing this project gives students an incentive to complete the writing process because you want your story to be great. I also think digital storytelling greatly enhances the aspect of publishing your work. I personally wanted to show everyone my finished work. I would never have done this with a written paper.

Having to tell my story in such a few words made me aware of what is really important in a story; every word has to matter. This was a different way of writing than I was used to, and I believe it will help me as a future teacher in teaching a style of writing that is conscious of making every sentence in the story matter to the message of the story.

I think the digital storytelling process really helped me understand how to teach different writing techniques. I decided it's much harder to write 200 words than 2000! It really makes you see how to choose the exact words that convey what you want the reader to understand.

I had never thought about using movies as a medium for practicing the writing process, but I see now that it works really well! I think it would be a great way to engage students, especially boys, if they know that the story they are working on will be turned into a movie.

I really think that this project would be very beneficial to teach children about the writing process. It made the experience more fun, and the final product was worth the work! This is something that students will definitely want to show off to their parents, and is something they could reference back to when needed.

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Out of the fifty-five pre-service teachers who responded to reflection question 1, three indicated that they would not feel comfortable using digital storytelling to teach writing in a future classroom. Two had difficulty understanding how to use digital storytelling in a classroom curriculum; the third student felt that the project was not appropriate at the kindergarten level.

I had a hard time with the whole process. I know that the classroom is becoming more and more digital, but it changes every day, and I just don’t think that I would use this in my classroom.

To be perfectly honest, it just confused me. I have no clue how I will teach this. I'm not sure what I expected out of this project, but I'm not really sure what I got out of this. Sure, I know how to use this awesome software now, which I'm totally excited about, but I don't know how to fit it into my curriculum.

I hope to teach pre-k or kindergarten in the future, so I don’t think that I will be teaching about the writing process in the digital environment. I think that involving more technology in the curriculum is important for older students. They spend much of their time on their computers outside of school, so why not use their love of technology in the classroom?

Patterns in the interview data corresponded with the reflection response themes. Pre-service teachers indicated that they valued the digital storytelling project as a model for how to teach the writing process in the digital environment. These students also mentioned valuing the virtual storytelling circle as a strategy for peer review and sharing story ideas and interventionist conferencing as a method to help students to edit and refine a narrative. Students also brought up aspects of the digital storytelling project that they found difficult such as story selection and cutting down the written narrative to the word limit.

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Valuing the digital storytelling project to teach the writing process.

Cher said that digital storytelling not only combines writing and technology, but also follows the five steps of the writing process and allows students to share their work with peers. She stated that during the digital storytelling project pre-service teachers had the opportunity to go through the writing process to create a story in a supported learning environment. We pre-wrote, and we drafted. That took the longest time for me to get the story to the right amount of words and to get it to where it had a rising action and a climax. She commented that pre-service teachers worked on the digital storytelling project as students and explained that the digital storytelling project was a model for what her future students might go through as they try to write a story. I think that working through the writing process really showed how important it is to have your story come out the best way. Your movie will reflect all the steps that you went through.

Peggy said the digital storytelling project gave her an insight into how her future students will feel when she teaches the writing process. The project forces you to be very intentional with every word you use and how you illustrate the story and read the narration. The end result is a very compact, meaningful reflection of the author.

Gretchen mentioned that she learned about the elements of the writing process in a previous class project.

But digital storytelling was good because we were supposed to write short and sweet which is what 4th graders are doing. It was great to see a model of how we can conference with students and help them and how they can help each other by reading their peer’s work and reviewing it.

Sally stated that the digital storytelling project highlights the importance of the writing process and technology. It takes all of those steps in the state standards.
Writing in the Digital Environment

highlights planning, writing, editing, and publishing, and technology, and it’s fun.

Maybe that is important to kids who think that writing is scary and boring.

Valuing the virtual storytelling circle.

Gretchen said that she enjoyed the virtual story circle because she likes getting feedback from peers about her writing and what she can do better. *I will think a piece of writing is fine, but then other people will notice things. It’s different when you read someone else’s writing versus your own.* She said that that two different people posted feedback to her story both telling her that she rushed the ending too much. She also mentioned that the virtual storytelling circle was a great opportunity to see everyone else’s story.

The variety was just so great, so many different stories, and you got to relate to everyone personally, just peer to peer. In addition to just enjoying the reading, it helped to develop your story because you could get ideas from everyone else. You got to read as many stories as you wanted or the whole class. I just kept reading more and more. I read almost all of the stories because I really wanted to know what other people did. I was worried because mine was so long. Before I got my story down to 500 words, I went through and read all the stories just to see how they cut stuff out. It was good having those to look at.

Nan commented that reading other stories definitely helped her. *I think that was kind of an eye opener to read other people’s stories. What I had was not it! Maybe the middle part was it, but I needed to get rid of the top and bottom.*

Leigh said that a big part of the writing process is getting feedback from others and hearing what works and what does not work. *You definitely have to step out of your own mindset for a little bit.*

For Rhonda the hardest part of the digital storytelling project was picking a topic. *I found ten different topics that I could have done. Either it was going to be too much for*
250 words, or it just wasn’t going to have a good plot line. She said that the virtual storytelling circle allowed her to read many stories. *I read almost everybody’s story. It helped me to think about my story. Only one person gave me feedback. Her feedback was actually good because I didn’t realize that I was leaving out parts of my story.*

According to Peggy, reading other stories was kind of an encouragement. *You are not worried about your story being weird or not like what was expected. It helped to see where everybody else was going and the types of stories they were writing.*

**Valuing the interventionist conferencing model.**

Cher stated that it is helpful when a teacher works with a student to make a product better. *When the instructor said you could do this, you could do that, it did not mean you had to do it that way. She was just suggesting.*

Peggy said that she liked hearing an honest evaluation of her story. *If something is not relevant to the story, like in mine, it was good to hear it. That helped me when I was thinking about refining the story.*

Gretchen mentioned that the instructor helped her to cut her story down. *I don’t think I would have been able to do it on my own. I would read and read my story. It was hard for me to figure out what I could cut out.* Gretchen also said that she did not know that using interventionist conferencing was appropriate in the classroom.

I have always been taught that you just suggest. I want to be able to help my students with their writing. I feel like if I were to do this project again, I would do it so much better because of the help I received. It helped me to learn to write shorter, more concise stories. This project has been a model for teaching writing and especially for how you go about conferencing with students in the classroom. It has helped me to see how we can conference with students and help them; how they can help each other.
Wanda said that conferencing with the instructor helped her to narrow her focus and understand what would work and what wouldn’t work. She commented *it’s good to know that a teacher can intervene. I might worry about hurting feelings or stepping on toes. It’s good to know that saying something will help out more than not saying something.*

Faye mentioned that conferencing with the instructor enabled her to better understand the meaning of conflict in story structure. *I just thought a story had to have a conflict or a solution. I didn’t realize that in conflict something changes; then it is resolved.* Faye stated that revising to reveal the conflict in her proposal story made the story more difficult for her to share.

I wanted to say I was really uncomfortable, but I wanted it to be all about I was cold, I was hungry, it was raining; nothing about not wanting to be there. I didn’t want to share that part. I didn’t want his family to know I wanted to go home.

Mary Jane stated that a one-on-one, hands-on approach always works better for her.

When we are a whole class and the teacher says here are some guidelines, you really don’t get the help you need. Some people can catch on, but other people are like what does she mean by this? I would rather have the teacher right there saying this is what I mean, or you need to do this or this could be better. I need someone to show me.

Lana pointed out that often students are concerned that their work isn’t good enough, so being able to talk it over with an instructor helps them to get on the right track.

When someone does not let you know that you are not on the right track and then you finish; that’s going to affect your grade. That’s going to affect the final product, so it’s better to find out early than too late. It really helped me being able to talk about what my ideas were.
Shanna said conferencing with the instructor forced her to get to another level of thinking about her story.

She gave me a couple of ideas. I kind of went off of her ideas. I just started going through and combined a few sentences, so I could take some stuff out. I ended up seeing some things that had nothing to do with the story. I cut them out. I really liked the end product.

Reflecting on the interventionist conferencing model, Rhonda said it is an approach that I’m not used to. I think it is kind of a shock at first. You are used to people saying ... Oh, that’s good. She stated that the interventionist approach to conferencing is more straight to the point, and it helps student more. It definitely saves time, and it gets you on the right track instead of letting you turn in something that is wrong and then getting graded down. Even though Rhonda responded favorably to interventionist conferencing in class, she expressed reservations about using the approach with young children. I am going to teach pre-k, kindergarten, first grade. They are just learning to write. You want to tell them what is right, but you also don’t want to discourage them before they really even start.

In interviews, pre-service teachers agreed that the digital storytelling project served as a model for teaching writing in the digital environment, but they also explained that finding a story topic and cutting the written narrative down to the word limit were difficult aspects of the project.

For Peggy choosing a story to tell was most frustrating part of the digital storytelling project; just sitting there and not knowing what to write about. Wanda agreed that coming up with a topic was frustrating. I had too many ideas, and I couldn’t narrow it down. It was hard just picking really short instances.

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Cher stated that writing the first draft of her story was the hardest part of the project, but cutting the written narrative to approximately 250 words was also a challenge.

Sally indicated that finding the right words was difficult. *I had the story, but making it concise enough to fit... Cutting was definitely the hardest part for me. I have a problem with brevity.*

Gretchen agreed that cutting her narrative down was difficult. *When I look back on it, I think that it was such a good experience. I need to learn to cut down on the fluff, the things that maybe aren’t really necessary to the story.*

**Digital Storytelling as a Method for Self-expression and Sharing Stories**

Writing a personal narrative, thinking about a meaningful personal experience, and sharing a digital story within a community of learners helped pre-service teachers to develop a greater sense of personal identity and voice. Reflection question 2 asked pre-service teachers what did telling your digital story mean to you. Analysis of responses indicated that pre-service teachers valued digital storytelling as an opportunity to tell a personal story and talk about self and as a chance to reflect on an important life experience. They enjoyed sharing the digital stories with classmates and learning about the life experiences of other pre-service teachers. Pre-service teachers also mentioned having a sense of accomplishment and pride in the digital artifacts that they constructed.

Similar themes arose from analysis of the interview data. Pre-service teachers revealed that the value of constructing and sharing a digital story is both intrinsic and extrinsic. They enjoyed a writing assignment that provided an opportunity to revisit and...
reflect on a meaningful life experience and also allowed them to tell a personal story.

Sharing the digital stories in class let students to bring to light identity events and to be present as individuals within the learning community.

Several pre-service teachers discussed feelings of resistance to sharing personal stories with others, especially with classmates that they did not know. Other students indicated that the process of writing the personal narrative and sharing the story with classmates allowed them to come to terms with past experiences. Results of the reflection responses and interview data are addressed by themes.

**Telling a personal story.**

I loved having the opportunity to write a story that is important to me while practicing the writing process. I really enjoyed telling my story. It was a very big moment in my life and for the rest of the band that year. We continued to talk about that competition for the rest of our band careers, and people still talk about it today.

To me, telling my digital story meant that I could relive a moment. While writing my story, I got the same butterflies in my stomach that I had over seven years ago. I used my words to explode the moment and share a little bit about who I am.

The story about getting my horse is truly the beginning of a new chapter in my life, so I enjoyed getting to tell it. My horseback riding truly defined a part of my life and changed my teenage years. I never played a high school sport; I rode my horse and competed. Because of this, my high school years were different from many people, and I think it makes me special!

Mary Jane valued the digital storytelling project because she got to tell her personal story. *It was my story in my voice. It reflected my feelings. This project allowed me to dig deep and find a moment in my life that I know is unforgettable.* Mary Jane was particularly touched by the way her story affected other students when her digital video was shown in class.

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Not only are you happy because it is your story, but also other people can relate to you because some of those people have done the same things or experienced the same things or had those same moments like me.

Mary Jane said that reflecting on her brother’s death was a very emotional experience that she learned from.

I didn’t think that I was going to be that touched by it. I just thought I was telling a story that happened five years ago. Retelling the story kind of brought me back to when I first found out. It brought me all the way back to the first stages of dealing with it, kind of like reconnecting to the whole thing. It was good in a way. I guess I learned that I wasn’t as over it as I thought I was. I also learned that I could actually tell the story and do a good job of doing it and have people feel like I felt even though they didn’t go through what I went through. I think that was a good experience.

Linked video: *The Cry from Down the Hall*

Rhonda commented that her story meant more than what people think it means. She said that watching her video in class was cool.

You are like…Oh, that’s my story. I can’t believe it. I think kids would love that. I know I got a kick out of seeing mine and everybody else’s. You are like…it’s just something new. It’s way more interesting than writing another paper and getting it back with red ink.

Rhonda told a story about making a personal decision to transfer as a junior to her father’s alma mater, Texas A&M University. She talked about the impact of sharing her digital story with her father by posting it on YouTube.

If you could have seen the reaction…like my dad cried. I have never seen my dad cry. My story means a lot because it’s like so much of who I am. It’s not just about me. It’s about my family. It’s a huge thing in my family…being an Aggie. My granddad was here during World War II. He went off and fought and came back and graduated. I’m the first girl cousin. I have a huge family, but none of the girls have ever gone to A&M, but all the boys have. I am really close with my granddad too. He’s 84. He won’t know what this is, but he will like it. My grandmother will love it too.

Linked video: *Right Where I’m Supposed to Be*
Reflecting on experience.

My story is important to me because it shows exactly who I am; shy and quiet until you get to know me. I don't remember a whole lot during my kindergarten years, but this is one memory that has stuck with me forever. After the writing and digital story process, the overall "lesson learned" in my story has opened my eyes because sometimes I am still very much like the child in the video; scared and maybe sometime too quiet. I should really speak up and give more of my opinions especially in class.

I enjoyed being able to tell my digital story because it was fun to think back on memories of my whole family at our favorite vacation spot. Even though my story is something that was really terrifying to me when I was a child, looking back on it only makes me reflect on how my Dad was there for me then, and how he and the rest of my family will always be there for me.

My digital story is a prominent memory of myself in first grade. I enjoyed sharing it because it just shows how much innocence you have when you are six years old. Now if I took some Tootsie Rolls from someone, I might not feel that guilty. I would probably somehow justify my actions, but back then, the guilt I felt was all I could think about.

Peggy said that telling her story brought back good memories. It's been three years since I danced.

Sometimes when you are just going through life, you kind of forget about some of the sweet things about growing up. It was just really nice to remember; just thinking about it and remembering that was a huge part of my life … being who I am.

Linked video: Backstage

Sally told a childhood story about catching insects with her brother. She stated that a lot of people are not aware of her childhood fantasies of becoming an etymologist.

The best part of the digital storytelling project was reliving the memory; cherishing every bit of it because it forced me to relive that moment in such exquisite detail that I was able to put all of myself into it again and maybe become a child again.

Linked video: The Day of the Tarantula Hawk
Sharing digital stories with others.

Telling my digital story meant sharing a piece of my life with everyone. Just being in class with people doesn't mean you are necessarily going to get to know them, more than just their name. This project really helped to allow the class to share a part of who they are, and I think it is going to be great for bonding and really becoming a team in the classroom.

At first, I felt somewhat uncomfortable sharing personal things with people I don’t know well. After finishing the project, I feel really proud of the original event as well as the way I told it in my story. I think it is a good way to share something unique about yourself as well as express feelings and emotion. It is an easy way for students to share their writing in an unconventional manner without the embarrassment of standing in front of the class and reading the story.

My favorite part about this project was that you can truly make it your own. I love that it is something that you can show to family or friends and something you can keep forever. I feel really good about my project and sharing it with those around me was a moment I will never forget.

Cher said that the best part of the digital storytelling project was seeing the final product and sharing the digital stories in class. *You get a glimpse into everyone’s life even if it is just a small little part.* She commented that the digital storytelling gives students the freedom to talk about self and to choose what they want to share. *I think that what deters kids from writing is that they don’t get to talk about what they want.*

Linked video: *The Championship*

Gretchen stated that she enjoys sharing everyday anecdotes friends. She commented that digital storytelling provided a more creative way to tell stories, and it allowed her to share with the whole class. She also liked hearing other students’ stories. *There are people I sit next to every day, but I didn’t know that they were the prom queen, or volleyball champion, or track star. It was neat to see the array of personalities and*
experiences in our class.

Linked video: *Snipe Hunt*

Shanna told a story about an embarrassing childhood experience. She commented that she kind of liked revealing her embarrassment.

Obviously no one is perfect. I know some of the people in the classroom. Others, I don’t know. It was fun for me to share my embarrassing moment with people I do know. For others, it was a kind of segue of knowing a little bit about me. It felt good. I laughed at it when I watched it again.

Linked video: *The Fearful Fall*

Faye chose to tell her proposal story. She said that sharing the story in class made her feel like she was actually being real.

A lot of people didn’t know about how I wanted to get on the plane and go right back home 30 seconds before he proposed. Everyone was like tell me about the proposal. I’d say we were in a castle. He said I love you; I cried. I never would have shared all the other stuff. I felt like I had exposed myself and was honest about it. It kind of felt good to get that off my chest.

Linked video: *Welcome to Germany*

Nan valued the opportunity to share a personal narrative with classmates because it let others know more about who she is as a person, but she also indicated that telling a personal story is a little intimidating. *I’m not very open with people. I love people, but people judge. I felt like what are they going to say about my story?*

Nan mentioned that she choose a story that she felt comfortable sharing with classmates.

Sharing about my first job experience as a dance teacher for disabled kids tells a lot about who I am. It made me feel as if people got to see a little part of me. Even if other students don’t relate to my story or feel the same way I felt, they actually did see a part of me.
Like Nan, Lana indicated that telling her story made her feel a bit vulnerable; however, she valued the experience of sharing her story with classmates.

I found that by opening myself up to others, I learn more about others, and I can see that we all have those stories we hold within us. By sharing this story, I feel I have been able to better connect with the others around me, laughing off those moments that make us feel uncomfortable. It feels good to laugh these off, because that is what makes us more reflective individuals and more confident in ourselves.

Linked video: *A Split Second Image*

**Developing a personal voice.**

Getting to tell my digital story really allowed me to incorporate my own tone and voice easier. I struggle sometimes to let my own voice and tone be evident in my writing because I am trying to "follow the rules," but this allowed more freedom. I really liked getting to put my own personal touches with the pictures because that also added tone when my words did not say it all. Telling this story digitally really made the process more personal and helped me tell the story the way that I really remember it.

I really enjoyed getting to choose the words I wanted to visually illustrate. I also enjoyed getting to narrate my story using my voice and getting to emphasize the words I wanted allowing my emotion and feeling to show through my expression.

Telling my story was very difficult at first because of narrowing it down to the core. But once I did, I felt like I actually owned that story. I owned those words and that moment in my life. I could actually step back in time and recreate the emotions I felt. It was like it happened all over again.

**Pride in the digital artifact.**

My digital story telling project was a very personal account. It was a powerful time in my life, and I loved that I could express those emotions in a video. I think the short story is really powerful, and it leaves room for other to think about the situation and what it must have been like to be in those kinds of situations.

At first it was really hard to think of a topic that I wanted to talk about, but after that it all fell into place. I really liked being able to express my story in a new way. The pictures really add to the voice and helped with imagery. It was really
fun to watch all the movies and hear all the stories. It feels good to be able to publish a story using technology.

For me, digital storytelling was a new way to express myself and a significant event in my life. It was nice to be able to tell a story in a different way, instead of writing a paper. I enjoyed using digital technology to express myself.

Gretchen admitted that she was a little embarrassed when her digital story was playing in class, but later she felt proud of her efforts.

It’s personal sharing your story, your voice, the way you choose to depict your story. But afterwards, I was like that was good. I was proud of it. I am more comfortable sharing it with my mom and my friends. Oh, look at this project that I have done. People are like … that’s a really cool project. I wish I had done that in school.

Nan showed her project to her roommate and her best friend. *I was like... You’ve got to see this. I’m kind of proud.*

Mary Jane was nervous about how other students would react to her digital story about the death of her brother, but she said that the feedback that she received from other students and from the instructor after class was the most rewarding part of the project.

*I just want to tell you that your story was really, really good. I really enjoyed it. I was like thank you. I didn’t mean to make people cry. I thought I was going to get a good grade on it, but I guess I didn’t think it was going to affect people like it did. I didn’t think it was going to affect people deeply.*

**Digital Storytelling to Integrate Digital Technology in the Classroom**

The digital storytelling project actively engaged pre-service teachers in the construction of a digital story in a supportive learning environment. Participating in the project helped pre-service teachers to feel more confident about using digital technology and enabled them to envision how they might apply digital technology methods in a future classroom.
Analysis of the reflection responses and interview data showed similar themes. Pre-service teachers indicated that the digital storytelling project increased their confidence level with using digital technology applications. The project demonstrated a new strategy for teaching writing and showed pre-service teachers a method for integrating digital technology in a future classroom.

**Increased confidence level with technology.**

Engaging in the digital storytelling project has allowed me to come in touch with many different types of technology and has showed me multiple possibilities that I can incorporate in my classroom. It has really eased my hesitation about incorporating technology into the writing process.

I feel more comfortable using technology, and think this will be useful in the classroom. I would have never thought that the writing process could be done through the digital environment. It incorporates writing and technology, and kids will enjoy this process. It is a different accomplishment being able to publish and share their stories.

When I first heard about the requirements for this project, I was horrified at the thought of making a movie using my own narrative. After my movie was on the communal hard drive, I realized that the project ended up being a lot easier than I expected. It was maybe not something that could be used in a kindergarten or first grade classroom, but could definitely be used in the upper elementary grades. This project has make me realize how drastically different the writing process is in this day and age. I never even used a computer to write any sort of stories when I was in elementary school.

Nan stated that the digital storytelling project helped her to overcome a fear of technology.

At the start of this project, I was intimidated by the task of making a movie all on my own. I now see that the project is definitely one that I am capable of doing, and also using as a teaching tool for my future class. Kids in this generation are much more technology savvy than we are, and they may perhaps be more engaged in the writing process knowing that they get to use the computer to publish their writing.
Shanna admitted that she was scared of digital story telling project because she had never used Moviemaker. *But now that I have used it, I thought it was very simple. I would use it again.*

Rhonda said that hearing about the digital storytelling project in class made her nervous. *I didn’t know what the software was or anything. For my age, I’m really not good with technology. But once I saw that you just drag and click; I can do that.*

**Digital storytelling as a new strategy for teaching writing.**

I think that digital storytelling is an innovative and fun way for teachers to teach different concepts in all subject areas. I think students would enjoy listening and watching a digital lesson rather than listening to a teacher talk about it. It is a different way to teach and get the concepts through to all students in different and fun ways.

I found that the more we know about technology the more we will be able to show and interest the students we will teach. This project shows children how to pre-write effectively, so that their story comes across effectively. It also gives them a change to use graphics and voice in their work.

After going through the process of writing and publishing my story, I see the value and significance this project has. I think it is important as teachers to think of new and creative ways of expressing our stories and experiences with our students. Since technology is advancing and taking new roles in the classroom, I think it is important as educators to give children the opportunity to use technology and express themselves in new ways.

At the beginning of the digital storytelling project, Sally had doubts about using computer graphics and sound to accurately convey the written word. *I felt that perhaps such an activity would detract from the very nature of the narrative itself.* She indicated that going through the digital storytelling process changed her mind about teaching writing in the digital environment.

Not only does this project ask participants to delve into their experiences and convey them by going through the process of the writing workshop, but it
engages creativity by asking students to put together images and sound to strengthen that story. I realize that we are in a growing age of technology where students encounter computer-based programs every day. What better way to incorporate a technology than thorough a fun and still highly academic product. No more are the days of simply writing a passage and illustrating it with markers and crayons.

For Leigh, the most significant value of the project was getting to use computers. *Even the title of the project Digital Storytelling was exciting to me. Technology is the wave of the future. Being able to embrace that in a college class was valuable to me.*

Leigh particularly liked the visual aspect of digital storytelling and sharing her digital story in the classroom. *I just liked being able to make my story into something that other people could watch. The most fundamental part of this project was that people could see my story, literally see it and not have to read it.*

Linked video: *Surviving George*

**Integrating technology into the classroom.**

Before this project, I was confused as to how to integrate technology into the classroom. Now I believe I have a great tool at hand. I found the digital storytelling project very informative and innovative. It can be used as a fun and interesting spin on the writing process in the classrooms. My students hopefully will be excited to write and practice the writing process as they get to produce digital masterpieces.

Technology can be very intimidating and by experiencing this program and creating a fun story, it has allowed me to be more comfortable with implementing this into a classroom. By combining audio with a well written story, it really makes a story completely different from just a book with words.

This project is a great way to combine technology and writing. Classrooms today have student who are way over my head with technology, and it showed me a great way to connect the two. I think it will be really exciting for children to experience and take their work even further.
Cher stated that she would definitely plan to use digital storytelling in a future classroom; however, she indicated that the process might be difficult for elementary students. She commented that with modifications digital storytelling would be a good way to incorporate technology and writing together, and it would be especially motivating for students who are not that interested in writing.

If you could transcribe their stories and put them into a computer, they would definitely be able to draw their own pictures. They do that all the time; draw representations of their own lives and their own stories.

Cher commented that school kids would probably have an easier time coming up with story ideas than the pre-service teachers in her class.

For a kid, it is definitely not as hard. They have stories like that all the time. They come into class, and they will just tell you about anything. They are so excited about any small story.

Gretchen liked the idea of using Photo Story3 for younger grades for writing poems or little stories with only a few images to give students experience with combining writing, art and technology.

If I taught 4th grade, I would definitely use this in my classroom. It’s really a great tool. It is a little tedious at the beginning, but I know how much kids love drawing and art work. Making an actual movie is really cool. Kids get the hang of things very fast just by watching.

Leigh hopes to use the digital storytelling project with gifted and talented students.

Digital storytelling would get them to think out of the box. I would focus on the storyboarding. In my mind, that’s what makes this project different; not just the fact that you are turning a few lines into a picture. It just makes you think differently about your story. It makes you focus on how images affect mood and meaning.

Lana liked the idea of using the digital storytelling to develop a documentary.

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The first digital story that I made was a documentary, and I really, really enjoyed how we presented the information and made it seem more interesting, more powerful. I also think it would be important first to do it for practice as a class and then maybe in small groups. I don’t know that I would ever ask students to do this on their own.

Sally stated that until she is more comfortable in the classroom and able to see how much time the project would take with certain age groups, she would probably use digital storytelling as a kind of final project. Sally shared that her goal is to teach writing.

I want my students to be writing everyday; to be writing about their experiences. Maybe they choose their most important experience or one that has had an impact on them; then publish it and make it into a movie night, a time when parents can see the project.

Mary Jane suggested that she might construct a digital story as a personal introduction; kind of showing the class who I am. She also mentioned having students work in groups to make a movie about the whole class. We could have a movie night with the parents.

Like Mary Jane, Wanda also liked the idea of creating a class movie to share with parents. I like the idea of doing a class project where each student does one or two slides. She suggested that combining journaling with the digital storytelling project would help students to come up with story ideas. When you journal, you often write three or four pages just on one little incident. I think that might be a good way for student to come up with ideas by looking back through their journals.

Faye liked the idea of making a movie about herself to play on the first day of school like an introduction. I think that would be more effective with younger kids than me standing up there saying...this is my name and this is where I grew up.
Shanna suggested using digital storytelling as a “get to know me project” at the beginning of school to learn more about each student and also to incorporate the writing process…. *to see where students are and then maybe do it at the end of the year to see the change.*

Rhonda plans to use digital storytelling as a group project with young children. *Maybe more like a documentary. The parents would just love it if you showed them at the first, then in the middle, and at the end.* She commented that it was good for her to see that the digital technology required to construct a digital story not too difficult.

I’m from a really small town, a 2A school. In my school, we had computers, but we just did PowerPoint, Word, and Excel. Also I have not had any technology classes at Texas A&M University. I had never seen a Smart Board until this semester ever!

**Using Digital Technology in a Future Classroom**

Post-implementation question 3 asked how do you anticipate using digital storytelling with students in a classroom. Responses were consistent with themes expressed in replies to reflection question 1 and the interview data. Most pre-service teachers indicated that they would use digital storytelling to teach the writing process. They stated that combining technology with the writing process would motivate students to write. They suggested using digital storytelling as a group project both in language arts and social studies. Of the sixty-three pre-service teachers who responded to post-implementation question 3, only three students indicated that they were not sure they would use digital storytelling in a future classroom.
Using digital storytelling to teach writing.

I think I would use digital storytelling with my student to encourage reluctant writers to dive into the writing process with the promise of making a movie.

I can use my digital story as an example and use it to teach the 5 step process. I would love to have my students create their own digital stories to learn more about them and teach them about the writing process.

I think it would be a great project for students to choose a story or idea they care about and add drawings to make a digital story. I remember making books when I was in elementary school, and I feel like this is a modern version of making books.

Using digital storytelling to motivate students to write.

I would use digital storytelling mostly as a motivational tool to get students into narrative writing and sharing work with peers. It is a fun way to incorporate technology into that classroom that I feel student would enjoy. It also seems very beneficial even across grade levels.

I plan to have my students write stories about their families and summer vacations. I can really see how this could motivate students to write.

I think it will give students a motivation to write stories worth publishing. I think it could also really help when used within content areas.

Other classroom application for digital storytelling.

I anticipate using it if I have an older elementary class. I think having groups of students come up with a story and work on it together would be a positive experience. Making a story as a class and constructing it together would be fun too!

I plan on being a language arts or social studies teacher. In English I could use this just as we have done and in social studies let student illustrate and tell different stories from history such as Lewis and Clark.

I would like to use digital storytelling as a means to introduce my future students to each other as a get to know me activity at the beginning of the school year. I may use it to tell stories to my students or have my class write a story to make a video together. In an older classroom, I may possibly have my student make their own video.
Research Questions 2

The second research question asked how engaging in a digital storytelling project helped pre-service teachers to better understand the connection between the planning process in the text-based environment and the planning process in the digital environment. To answer this question, the researcher looked at responses to pre-post implementation question 1, related to the use of a planning process in writing, and to post-implementation survey question 2, related to use of a storyboard in the digital story planning process; then at interview data.

Findings indicated that many pre-service teachers do not generally apply the five step writing workshop planning process in their own writing unless it is a project requirement; however, most student employ some elements of the reflective writing process. Responses indicated that students became more aware of the value of the reflective writing process as they worked through pre-writing, drafting, editing, and revision in a supportive environment. Results also indicated that many pre-service teachers in the study used the storyboard as a strategy for thinking about the connection between words and images and as a method to sequence and time images in the digital story.

Using a Planning Process in the Digital Storytelling Project

As pre-service teachers worked through the writing process, drafting, editing and revising a personal narrative and then used a storyboard to plan the construction of a digital story, they came to better understand the connection between the planning process in the text-based environment and in the digital environment.
Pre-post implementation responses related to the planning process.

Pre-implementation question 1 asked pre-service teachers to describe the planning process they use when working on a writing assignment. Analysis of responses indicated that approximately 20% of the pre-service teachers who responded to the survey do not use a planning process when they work on a writing assignment (n=63).

I'm pretty bad about planning. I will sit at my computer and write it.

Honestly, I don't plan. I just write what's on my mind.

I do not normally plan writing unless it is a part of my grade.

I plan in my head. It is difficult for me to write a plan down. It feels like once you write it down, you're stuck.

Other responses showed that approximately 40% of pre-service teachers used some form of planning process when they work on a writing assignment. Pre-service teachers mentioned a variety of strategies such as brainstorming, webbing, outlining, bulleting key points and rough drafting to develop a writing assignment. Approximately 40% of the pre-service teachers indicated that they use all the steps of the writing workshop planning process when they work on a writing assignment.

Post-implementation question 1 asked pre-service teachers to describe the planning process that they actually used to design a digital story. Analysis of responses indicated an increased use of the planning process as pre-service teachers constructed digital stories. 95% reported using some kind of a planning process, with 65% indicating that they went through all five steps of the writing process. 5% of pre-service teachers stated that they did not use a plan. (n=63).
Reported no planning process

Writing the story was my main planning tool. Once the story was complete, the digital elements fell into place.

I just went for the story and wrote as if I was living in the moment. I had a difficult time deciding on a topic, but managed to do okay once I had it picked out. Once that was done, I allotted time for the technology aspect of the project and with help, I did okay.

When the idea for my story came to me, I went with it. I am really not a pre-writer and so my pre-writing here was an afterthought. I know that might not be the best way, but that is the way it works for me.

Reported using some form of planning

Coming up with a story I could use was difficult. I jotted down main ideas for the event; then created what I remembered.

I thought about memorable moments in my life. Once I decided on an idea, I wrote a brief outline of what my story would be.

I wrote down all my thoughts in a list. I pretty much just wrote down everything I could remember that happened. I then put it in paragraph form and cut it down from there.

Reported using the 5-step writing process

I brainstormed a story that I could remember well and jotted down some memories. I wrote my draft and then revised it after I got feedback. I recorded it and then organized my storyboard and found pictures. After all the information was there, I compiled it using Window Movie Maker.

I brainstormed various events to use as a subject and chose one of the events and then began drafting. I then began to revise my draft, and I did this numerous times. I recorded narration and began choosing images. After this, I dropped them all into the Moviemaker and was done.

I first wrote down the events that happened and completed a rough draft. A peer edited my story; I condensed it down a little more. Once in the computer lab, I realized it needed to be even shorter and managed to tighten my story by eliminating unnecessary parts.
Using the Storyboard as a Planning Tool to Construct a Digital Story

Using the storyboard as a planning tool actively engaged pre-service teachers in linking recorded narrative to visual components in a timed sequence to convey meaning to an audience. Results of post implementation 2 indicated that using the storyboard to support thinking as pre-service teachers constructed a digital story increased pre-service teachers understanding of the relationship between words and images to convey meaning.

Post implementation responses related to use of a storyboard.

Post-implementation question 2 asked pre-service teachers to discuss how they used the storyboard to support their thinking as they combined narrative with images to create a digital story. Pre-service teachers reported that they used the storyboard to link images with narrative segments. The storyboard also served as an organizational tool to determine how many images would be required to tell the story and to break up the text into segments. Responses indicated that approximately 8% of pre-service teachers in the study did not use a storyboard in spite of the fact that it was a project requirement.

Using the storyboard to link images with narrative segments.

Helped me decide what the words "looked" like.

It helped me see the narrative and the images more clearly, and the visual allowed for organization. I liked the storyboard and how it put the project in order to complete the movie. Mostly it was beneficial to see the narrative and match images that corresponded.

I'm a very visual person so combining my words and pictures on storyboard was very useful. I tried to look for pictures before hand and found I couldn't put them in order until I used a storyboard.
I liked it because it helped me think out the pictures that I would be using and how they would affect my story. It really helped me plan effectively.

**Using the storyboard to organize elements of the digital story.**

The storyboard helped me to organize my text with the images I was planning to use. It was a great outline and tool that gave me a better insight into what the video would look like.

It helped me map out my story and look for the appropriate "pauses" when I split up the text. It allowed me to think of the images I wanted to use and how these images could best convey my story.

The storyboard helped me break up the text and decide where to use my pictures and which ones would work best.

**Did not use a storyboard**

I honestly did not create a storyboard. I found it pretty easy to place my pictures on the line that I wanted to use and then adjust the time as necessary.

I did my storyboard after my movie was complete. I only did it because it was required.

I didn't use a storyboard worksheet. I did not like the layout. Instead I just wrote notes on my final draft.

**Interview data: planning and use of a storyboard and recording narrative**

**Planning and use of a storyboard.**

Lana readily admitted that she does not generally use pre-writing strategies or a planning process when she writes. She commented that she created the storyboard after the fact to turn in; however, she did use a planning process to design her digital story.

To really figure out my images, I had a printed copy of my story just on a piece of paper...just written out in paragraphs. I took a pencil and put a dash at the end of certain segments, and then I wrote above it the picture that I wanted to go with those words.
Lana mentioned that the one thing that did change for her during the digital storytelling process was learning the power of personal illustrations.

At first I did my digital storytelling with pictures from a Google search, but when I viewed my project, I didn’t really like it. I decided to try my hand at creating my own illustrations. My personal illustrations put so much more depth and power into my digital story.

Lana said that the pictures were her favorite part of the project. *I know they could have been stronger, and I could have put more time and effort into them, but that was probably my favorite part because that really tied it all together.*

I knew what I wanted my pictures to look like when I started drawing. I could see them in my head. That’s how I knew what I wanted because I was thinking about it. I guess I do a lot of that kind of thing internally instead of externally.

Nan also indicated that she did not use a planning process to write her story. *When I write, I just go for it. I just kind of sit and let it flow.* Nan did use the storyboard to divide her narrative into segments and link the words to images she located on the Internet. She said that the images definitely helped her to tell her story. *They brought out what I really meant to portray.*

Rhonda said that the digital storytelling project made her realize the value of the planning process in writing. *I’m not a very good planner, but I have started because of this class.* Rhonda stated that she did use the storyboard as a planning tool. *It really did help to figure out what picture to put with what text. It helped to line everything up to see how everything was going to fit together.*

Sally started the writing process by brainstorming ideas. *I started by doing a sequential thing because it is a story; then I tried to identify where the high point would be and whether or not there was a conclusion.* She used the Microsoft Word storyboard.
template to organize her pictures. *I was kind of randomly choosing pictures from the Internet to go along with my story; then I was able to put them in a place and kind of see the order.* Sally commented that the storyboard also helped to divide narrative. *I was able to space out the vocalization according to the images. I was able to put the text with the image and make sure that it matched.*

Leigh began the project by thinking of a good story that she could write descriptively and with emotion. She made a star chart with the senses and then wrote, edited, and thought about how pictures could accompany the story. She indicated that the only difference she found between the digital environment and the text-based writing process was the addition of the storyboard.

I like the idea of storyboarding because it makes you analyze your piece of writing. It helped me get in touch with my story and really pinpointed the things that I was feeling because that is what I wanted to show in my pictures. You have to know which parts need to have more emphasis because digital stories focus more on showing than telling.

Peggy commented that the difference in writing in the digital environment was thinking about the story as you write and considering what pictures you need to illustrate the story. She indicated that the storyboard helped her to decide how many pictures she needed and where to put them. She also said that the storyboard helped when she was actually making the movie. *I actually found an excess of pictures on the Internet that I would have liked to use. It was good to help me decide which ones would really capture that part of the story.*

Cher commented that the storyboard was a good way to sort of piece out the narrative into the sections of the movie.
You kind of saw how it was going to transition, and you also got a chance to figure out what would connect best with the words in that piece, so that you could have an image that really matched and represented what you wanted through the writing.

She mentioned that finding the right images on the Internet took a lot of time because Google does not always provide images that fit with the story. Cher commented *without the images, your narrative would have to explain, so that someone could picture the image in their head; maybe not the exact image, but to get enough detail, enough elaboration so you feel like you are there.*

Wanda used the storyboard template as a preliminary tool to break the written narrative into blocks and determine the images that would be required to tell her story, *Lesson Learned.* *I sketched the storyboard and that helped me visualize my digital story and make sure that it was in order.*

Linked video: *Lesson Learned*
Next Wanda drew all the pictures for her digital story because she couldn’t find images online that really fit her story.

Drawing it out helped me to put the images that were in my head onto paper. The storyboard also helped me to break down when to pause on the video because I had that mental image of what it would look like. Adding images made the story not rely on the words as much. The images showed what I was trying to say, so I didn’t have to worry about adding as much description.
Figure 3
Storyboard with hand drawn images for *Lesson Learned*

<table>
<thead>
<tr>
<th>WOOSH! “Wait for us at the bottom of the hill. This is our last run.” My mom’s words trail off as I ski past.</th>
<th>I feel like a professional skier flying down the slopes without a care in the world except to go as fast as I can.</th>
<th>In no time at all, my brother and I reach the bottom. “Let’s go again. I bet we’ll still beat everyone else down the hill,” I say.</th>
<th>A rush of adrenaline comes over me as I get off the lift and whiz in and out of other skiers, gliding quickly towards the bottom.</th>
</tr>
</thead>
<tbody>
<tr>
<td>All of a sudden I hit a patch of ice. I speed up and I cannot stop myself.</td>
<td>“BE CAREFUL,” I barely hear my mom scream.</td>
<td>But I can’t make my legs do what they need to, and I’m headed towards an orange ski fence!</td>
<td>BAM! I see a flash of orange</td>
</tr>
<tr>
<td>… and then black</td>
<td>When I open my eyes, I stare at the gray sky above me. “Are you okay?” a man asks.</td>
<td>I turn to see red puddles on the snow beside me. “OWWW!” My mouth feels like it’s full of needles.</td>
<td>Why did I go so fast? It took a mouth full of blood for me to learn to be careful.</td>
</tr>
</tbody>
</table>

Gretchen said that she had never used a storyboard before the digital storytelling project. She commented that the storyboard helped her to split the story up and determine where she needed images.

I made my storyboard, but I ended up having to go back a couple of times to add a couple more images. The text was too long, so the picture just dragged on for ever. I just went back and added another box and split up the text, and it worked fine.

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Gretchen pointed out that she combined images from Google with her own drawings done with Microsoft Paint. *I think drawing the pictures is a great way to incorporate the arts into the classroom. This project combines the writing process with art.* Gretchen explained that she blended her colorful Paint drawings with the photographs by applying an overall effect to the video in Windows Moviemaker. *It was suppose to make it look like an older movie. I wanted it to feel like it flowed better, more consistent throughout the movie.*

Peggy used images from the Internet to tell the story of her last dance recital. She tried to unify her video by applying overall effect in Moviemaker. *It just helped to kind of connect images. In each of the pictures, there’s a different person. They are all a little different.*

Sally used Adobe Photoshop to blend images from the Internet with personal photographs. *I used the artistic brush work setting. I think it was pastels. I liked the idea of the photographs looking like a drawing, and I did not want to do the drawing myself.*

Faye said that the storyboard allowed her to associate images with the text. She indicated that she planned to include three pictures from the actual event, and she wanted to use color to convey mood in her story. She also wanted to use a visual metaphor to open the story, a weed to represent her dismal mood.

*I knew that it was a grey story. I decided to go with a sepia tone, plus some of my pictures were a little blurry because of the resolution. The sepia helped because it took away from the fact they were blurry.*
I fight the groan that is prying its way out of my mouth. I am cold, wet, hungry, in need of a shower. Jet lag slowly spreads up my body like a weed.

I wonder if his family even wants me on their family vacation. They would probably be happy if I were not here, stealing the attention from their precious son. I shouldn’t have come to Germany. I wish I could go home.

“I just want to look around a little more,” my boyfriend says. Impatiently, I let him lead me to the ledge of the castle. He looks out at the gray, foreign land. “We’ve had a lot of firsts on this trip,” he says. I nod in agreement. “How about another one?” Cautiously, I look him in the face. What is he up to?

“I love you,” he says. Tears pierce the back of my eyes. For two long years, I have waited to hear those words from him, words being saved for his future wife. “I love you too,” I manage to peep out. Tears start spilling down my face.

He gets down on one knee. He pulls out a ring. My ring. “Faye Smith, I love you. Will you marry me?” Tears pour down my face without restraint, dissolving all my fears. I see everything though new eyes.

This is my new family… my vacation now.

To indicate a transformation in her story, Faye chose to go from sepia tone images to a black screen to a full color picture. *I wanted the last picture to be in color.*

*It’s a grey day and then everything changed. Now it becomes color.*

Faye commented that the best part of the digital storytelling project was when her video came together.
I watched it, and I felt like this is it. The color and the timing and all the little effects made it. I remember having goose bumps. I could not have dreamed of it working out so perfectly. Just watching it, I felt like this is how I really wanted my story portrayed.

Discussion

Establishing a Digital Technology Context for the Study

The goal of teacher education is to prepare pre-service teachers to enter the classroom prepared to use digital technology effectively to support curriculum and improve student’ achievement. In order to accomplish this goal, pre-service teachers must view digital technology as an effective way to deliver curriculum; not as a separate component (Robin, 2006, Woodbridge, 2004). Teachers must have a positive view of technology and be comfortable with using technology before improved student achievement can occur (Sadik, 2008; Rakes & Casey, 2002).

Findings from analysis of the Digital Technology Applications Survey and interview data suggested that most study participants were already familiar with a variety of digital technology applications that they employ in other university courses and for personal use, even if their knowledge of digital applications required to construct a digital story were low.

Pre-implementation responses and interview data also indicated that study participants favored the inclusion of technology training in pre-service education, so that new teachers would be better prepared to enter the classroom and meet the needs of students who already use digital technology in their daily lives.
According to Rakes & Casey (2002), having a positive attitude toward technology is not enough to bridge the gap between pre-service education and successful integration of technology in a future classroom. “Even teachers who hold positive attitudes toward technology may have difficulty transferring these attitudes into productive actions” (Rakes & Casey, 2002, November, article 327-7308).

As I reviewed the pre-implementation responses, I was drawn to several quotes that reflect pre-service teachers’ feelings about why technology training is important in pre-service education.

Children love technology, and I don't know how to use it.

It is important for us to learn technology, so we can teach our students. They are growing up in a world of technology. We need to know about it.

If I learn how to use the technology now, it will be much easier to incorporate it into my classroom later allowing for a smoother transition.

As I listened to the voices of the pre-service teachers, their request seemed clear. *Teach me how to use digital technology in the classroom, so I am prepared to meet the needs of my future students.* Rakes and Casey (2002) suggest that technology training in pre-service education is often thought of as skill acquisition instead of a change process that affects the behavior of individuals and provides students with effective methods to transfer strategies into the classroom.

The digital storytelling project focused first on the writing to immerse pre-service teachers in the steps of the reflective writing process; then taught pre-service teachers the technology skills to transfer the narrative to the digital environment. Introduction of the storyboard as a planning tool showed pre-service teachers with a new way to think and
enabled them to match images with words to extend meaning. Publication of the digital stories and sharing them with an audience allowed pre-service teachers become authors.

**Valuing Digital Storytelling as a Method to Teach Writing and Support Instruction**

Findings from analysis of the pre-post implementation questions, the reflection responses, and interview data indicated that the opportunity to working through the process of designing a digital storytelling in a supportive learning environment from drafting a narrative and going through the editing and revision process to constructing and publishing a digital story on the computer provided new insight about the value of a reflective process in writing.

Though pre-service teachers learned the steps of the writing workshop process in a previous project, the digital storytelling project actively engaged students in applying the writing process. Several students pointed out that they had never used the steps of the planning process before, but due to this project they saw the importance of going through each step. Recurring statements in the reflection responses indicated that pre-service teachers recognized that the digital storytelling combines writing with technology and helps students to see the value of each part of the reflective writing process.

Interventionist conferencing with faculty during the drafting and editing process helped pre-service teachers limit and revise their narratives and demonstrated how teachers can go about helping student improve their writing. Students said that the experience served as a model for how to teach writing and improve student performance.

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The construction and publication phase of the digital storytelling project introduced pre-service teachers to new digital technology skills. Interventionist support from faculty scaffolded the experience and made pre-service teachers feel more comfortable with the process. Several students mentioned that the teacher’s support helped them overcome fear of using digital technology in the classroom. The opportunity for pre-service teachers to be exposed to new technologies while learning teaching practices in their methods courses and seeing the technologies modeled by faculty increases pre-service teachers’ levels of confidence in utilizing technology (Pope et al., 2002; Adamy & Boulmetis, 2006, Brown & Warschauser, 2006).

Many students said that the best part of the digital storytelling project was seeing the final product and sharing the digital story with others. The stories allowed students to reflect on past experience and to be present as individuals within a community of learners. Benmayor (2002) says that a digital story project provides a context for sharing experiences with others and an opportunity for thinking about self.

A few study participants expressed initial reluctance to share a personal story; however, they liked the option to select a story that they felt comfortable sharing. Pre-service teachers explained that having the opportunity to choose what they wanted to write about and speak in a personal voice motivated them to work on the project. They also enjoyed being able to tell stories using digital technology rather than just writing another paper and have the experience preserved in a permanent artifact. Many students commented that they felt really proud when their stories were shown in class.
Pre-service teachers went through the digital storytelling project as students. Analysis of the post-implementation responses indicated that most pre-service teachers plan to transfer the digital storytelling project into curriculum in future to classroom engage students in the writing process, motivate students to write, and to integrate digital technology in the classroom. Heo (2009) says new teachers are more likely to integrate technology in the classroom when they become competent with technology during pre-service training.

**Connecting the Planning Process from Text-based to the Digital Environment**

Although a few students still hung to “I just write; I don’t plan,” post-implementation responses and interview data showed that most pre-service teachers used the reflective writing process as they worked through pre-writing, drafting, editing, and revision in a supportive environment and as a result, better understood how to teach writing in a future classroom.

For the most part, pre-service teachers had never used a storyboard. Working with the storyboard was a new way to think and plan. Many students found that the storyboard extended the reflective writing process and helped them to make the transition from text-based writing to the digital environment. Students reported using the storyboard to break narrative into blocks; then link the words to images to extend the meaning of the words. Review of the digital artifacts indicated that students were able to successfully connect their words with images. Some students even utilized photo editing effects to blend images. Not all student used the storyboard in spite of the fact that it was a project requirement. For students who worked though the process of breaking the
narrative into segments and linking the words to image, the storyboard served as a reflective thinking support, a meditational tool that connected planning in the text-based environment to the digital environment.

Collier & Veres (2006) state that universities must provide pre-service teachers with opportunities to learn technology skills and also guide them to develop a valuing for technology and an understanding of how to utilize technology as a tool for learning and teaching. Students asked teach me how to use digital technology in the classroom, so I am prepared to meet the needs of my future students. The digital storytelling project has the potential to show pre-service teachers an effective, meaningful way to use technology in the language arts classroom and also engage pre-service teachers in a writing experience that will model how to teach the reflective writing process in a future classroom. The digital storytelling project is much more than just the acquisition of technology skills. It is a change process that affects the behavior of pre-service teachers as they experience reflective writing and learn to tell stories in the digital environment. The digital storytelling project demonstrates how to teach writing and provides pre-service teachers with an effective method to transfer these new strategies into the classroom.
Appendix 1 Digital Storytelling Project Rubric

Please print and submit this rubric on the day of your presentation. It is the student’s responsibility to include this rubric. This assignment will receive no grade without the: (1) Digital Storytelling Project Rubric, (2) Digital Story Burned on CD Disk, (3) Writing Workshop Evidence (Pre-Writing, Drafting, Revising, Editing, and Published Document).

Name: _______________________________

Title of Digital Story: ____________________________

The author participated in the story circle, presented their topic, and provided feedback to peers.

The author establishes and maintains a clear purpose throughout the story.

The digital story establishes the author’s point of view and contributes to the overall theme of the story.

The digital story presents the character(s) with depth. The character(s) supports the author’s purpose for the story.

The images create a distinct tone that matches the different parts of the story.

The narrator’s voice fits the storyline and helps to draw the audience into the story.

The soundtrack supports the author’s point of view and enhances the digital story.

The author’s story is concise, told with “economy of detail.” It does not seem too long or short.

Evidence of the Writing Workshop Process (Pre-Writing, Drafting, Revising, Editing, Published Document).

The author’s writing (including language and grammar) support the story by contributing to its clarity, style, and character development (Plot, Characterization, Author’s Style).

Total Value: _______ of 50 possible points

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Appendix 2  Making a Digital Story in Windows Moviemaker 2.6

Windows Movie Maker 2.6 is a video creating/editing software application, included in Microsoft Windows ME, XP, and Vista. It contains features such as a timeline, audio track, effects, transitions, titles/credits. Windows Movie Maker 2.6 is also a basic audio track editing program. It can apply basic effects to audio tracks such as fade in or fade out.

The world of technology is always changing! Check your computer for Windows Movie Maker 2.6. If you have the Windows XP operating system, Movie Maker 2.6 should already be included in your programs. If you have the Vista operating system, you may not have Windows Movie Maker on your program list. Download Windows Movie Maker 2.6 for Vista. [http://www.microsoft.com/download/en/details.aspx?displaylang=en&id=34](http://www.microsoft.com/download/en/details.aspx?displaylang=en&id=34)

Windows Live Movie Maker is also a free download; however, the program does not have the same features as Windows Movie Maker. Windows Live Movie Maker does not contain a time line, a valuable tool for designing and editing a digital story. Windows Live Movie Maker makes slide shows, but is not appropriate for designing a digital story where you need to link the recorded audio to images and control the timing of images to match the audio. [http://explore.live.com/windows-live-movie-maker?os=other](http://explore.live.com/windows-live-movie-maker?os=other)

You will also need access to Audacity, an audio recording and editing program. Audacity is a free download at [http://audacity.sourceforge.net/](http://audacity.sourceforge.net/)

Download the version of Audacity that fits your computer operating system.

Step 1: Write the script for the story that you want to tell. The script should be about 250-500 words.

Step 2: Use Audacity to record the narration of the script. Export the audio as a WAV file. Save file.

Step 3: Select photos, drawings and video clips. Crop images to a 4x3 ratio.

Step 4: Import images, video and audio (narration) into Moviemaker.

Step 5: Drag and drop the audio file into the audio timeline. Save as a project. Name your project. You must save as a project if you want your images to remain in the timeline when you re-open Moviemaker.

Step 6: Match your images to the recorded narrative on the video timeline. Remember to keep saving!

Step 7: Add titles and credits by going to tools. Add transitions between images by going to video transitions, but please remember that transitions are often very distracting. Use ONLY for effect.

Step 8: When you are happy with the product, save as a movie file: Choose save to my computer. Select the file where you want to save your video. Select other settings. Choose High Quality Video (NTSC). This takes a few minutes! This setting creates a Windows Media Audio/Video File (WMV). The file will only play in a Windows Media Player.

Step 9: Open a new Moviemaker file. (Your old images will come in when you open the new file. Delete them. They are still in the saved project. NOW Import your saved movie into Moviemaker. Your produced movie will come into Moviemaker in pieces which are numbered chronologically. Place the pieces in the video timeline. Play the video to make sure you have the pieces in the correct order.

Step 10: Choose music to enhance your story. Import the music into Moviemaker. Moviemaker accepts .wav files or .mp3 files. Place the music in the audio timeline. To modify the volume, click on the music in the timeline. You can fade in or out, raise or lower the volume, or mute the music. Be careful that the
music does not overpower the recorded narrative. To cut a selection, go to clip on the top tool bar. Then choose split. This allows you to select specific part of a track. You can copy and paste a clip along the timeline. To shorten a selection, go to the end and push it back to the point you want.

Step 11: Save the combined project as a movie. Give the movie a new name in case you want to back track. Choose save to my computer. Select the file where you want to save your video. Select other settings. Choose High Quality Video (NTSC). This takes a few minutes! This setting creates a Windows Media Audio/Video File (WMV). The file will only play in a Windows Media Player. To create an AVI file, choose DV-AVI (NTSC). This makes a much larger file that might overload your computer if you do not have a large hard drive.
Appendix 3  Experience with Digital Technology Survey

Please respond to the following question by indicating your experience level with digital applications on a scale of 1-5 with 1 representing no experience and 5 representing a significant level of experience.

Designate your experience level by circling your choice.

1 - I have no experience with this digital application or task.
2 - I have seen this digital application demonstrated, but I don’t feel comfortable using it.
3 - I sometimes use this digital application or task, but not regularly.
4 - I frequently use this digital application or task.
5 - I use this digital application or task daily

<table>
<thead>
<tr>
<th>Digital Application</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>Word Processing Software</td>
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<td>Presentation Software</td>
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<td>Video Editing Software</td>
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<td>Digital Video Camera</td>
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<td>Digital Scanner</td>
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References


Educational Researcher. 25(8), 43-46.


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