Monitoring and Assessing Digital Story Projects in Middle Grades English Language Arts RESEARCH

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Abstract

The purpose of this qualitative case study was to investigate teacher practice in the areas of monitoring and assessing digital story projects. The Common Core State Standards in English Language Arts require students to use text-based evidence in their analyses of literary texts. Woven into the standards are expectations for students' use of technology to research and communicate ideas in a variety of formats. When students construct digital stories based on literary works, they select images that visually represent characters, setting, theme, and conflict. Farmer (2004) observed that the process of selecting images to visually represent literary elements helped students to think critically about the story and what it meant. However, the assessment of student-authored digital products is a challenging proposition for novice technology users. The researcher followed the work of two middle grades English language arts teachers, whose students created digital stories to demonstrate their understanding of literary elements in the novel *The Outsiders*. Classroom observations, teacher interviews, and artifacts of teacher and student work shared through a project wiki, Google Drive and online conferencing comprised the data set. The study findings describe how the subjects used technology to facilitate project monitoring and how they incorporated formative and summative assessments into the digital storytelling project. Several implications for teacher education are discussed, including parallels to the writing process instructional model, the role of cloud computing in collaboration and assessment, and the importance of connecting teaching methods to technology coursework.

Keywords: monitoring, assessing, digital story projects, middle grades, English language arts

Introduction

The Common Core State Standards (CCSS) in English Language Arts present a rigorous roadmap for middle grade teachers and their students. In an effort to demystify the new standards and help educators understand how they differ from previous standards, developers have described their implementation in terms of "instructional shifts" (Common Core State Standards Initiative, 2014). The instructional shifts include giving learners regular practice with complex texts and requiring the use of text-based evidence in analyses of literary and informational texts.

Analyzing a literary text is a challenging undertaking for students in the middle grades. It begins with close reading of the text, which requires students to construct meaning, and continues with skillful representation of ideas and insights through written and verbal communication (Buckley, 2011). Since forms of writing at the middle and secondary levels have historically drawn upon student experience and opinion (Common Core State Standards Initiative), the emphasis on evidence-based writing in the new standards represents a significant change in practice. As teachers strive to implement the standards, digital storytelling – the art of communicating a message using a variety of digital multimedia such as images, music, recorded voice and video – may help students to develop analytical habits of mind and become more skilled in their expression of ideas.

An emerging body of literature suggests that the process of constructing a digital story strengthens students' skills in

reading and writing. When students create digital stories based on literary works, they select images that visually represent characters, setting, theme, and conflict. Farmer (2004) observed that the process of selecting images to visually represent literary elements helped students to think critically about the story and what it meant. Kajder and Swenson (2004) found that digital storytelling combined with a technique called "visual think aloud" improved reading comprehension. Others have found that digital storytelling also helps students compose, organize and express ideas creatively (Fries-Gaither, 2010; Kulla-Abbott & Polman, 2008).

Maddin (2013) identified successful strategies for planning and implementing digital storytelling in the middle grades classroom. The researcher found that collaborative teaching practice, a fluid approach to planning throughout the unit, and a high tolerance for risk-taking during implementation all contributed to the effectiveness of the project. Secure knowledge of pedagogy and content—along with knowledge of students' capabilities in reading, writing, and the use of technology—enabled the study participants to anticipate students' learning needs and respond to unforeseen challenges along the way—a finding resonant with Mishra and Koehler's (2006) technological pedagogical content knowledge framework (TPACK).

The purpose of this follow-up study was to investigate teacher practices in the areas of monitoring student learning and assessing digital projects. The researcher followed the work of two grade-seven language arts teachers during a six-week unit of instruction centered on S.E. Hinton's novel, *The Outsiders* (1967). Students created digital stories focused on analysis of theme, characterization, conflict or setting in the novel. The following research questions

were investigated within the context of the study:

1. How do teachers monitor learning during a reading/writing unit that incorporates digital storytelling?
2. How do teachers evaluate the acquisition of key skills, concepts and understandings through student-created digital stories?

Monitoring Learning

Wallace (2004) recognized the challenges of monitoring learning when student work is digital, noting that the use of computers and Internet resources "made it difficult for the teachers to apply their usual routines for tracking student work" (p. 474). Oosterhof, Conrad, and Ely (2008) found that observing the process can be difficult when student work is online and suggested that instructors identify methods for learners to document their processes (p. 156).

To guide and monitor student learning during technology-enhanced instruction, teachers need technological knowledge (TK); however, they must also possess content knowledge (CK) and pedagogical knowledge (PK). Mishra and Koehler (2006) argued that effective instruction was not only the result of teacher competence in each of these domains, but also the result of complex interactions between and among the three knowledge bases.

Pedagogical Knowledge. The pedagogical shifts in the Common Core State Standards call for learners to engage in rigorous evidence-based conversations about text, which become the foundation for text-based evidence in their writing. Research supports a process model for writing instruction in the middle grades, in which young writers learn about each phase of the writing process through models and practice; then they apply the writing process to their own work (Atwell, 1998; Goldstein

& Carr, 1996; Parson, 1985). Fries-Gaither (2010) found parallels to the writing process in the construction of digital stories.

Technological Knowledge. To monitor learning during a reading/writing unit that incorporates digital storytelling, teachers must be familiar with digital storytelling software, digital cameras, computer microphones, and copyright-free sources for images and music (Bull & Kajder, 2004). Robin and McNeil (2012) suggested that additional technology tools, such as audio recording and photo editing software, might also be employed. However, the authors cautioned that the "benefit should be carefully weighed against the amount of time and effort that will be required to integrate these media elements into a digital story project." Sites such as [Educational Uses of Digital Storytelling](#), [Kathy Schrock's Guide to Everything](#), and [EdTech Teacher](#) provide resources and technology support to teachers implementing digital storytelling in their classrooms.

Content Knowledge. For English language arts teachers in 43 of the United States, the Common Core Standards for English Language Arts identify essential content for each grade level. The standards include "critical-thinking skills and the ability to closely and attentively read texts in a way that will help them understand and enjoy complex works of literature." Developers note that "stories, drama, poetry, and other literature account for the majority of reading that students will do in their ELA classes" (Common Core State Standards Initiative). Writing standards stress the connection between reading and writing, indicating that students should be able to draw evidence from literary texts to support analysis and reflection.

Evaluating the Acquisition of Skills, Knowledge, and Understandings

Learning targets are more likely to be achieved when they are clearly defined at the onset of the instructional unit, and rubrics help students understand project goals and expectations (Pitler, Hubbell, Kuhn, & Malenoski, 2007). Educators for whom digital storytelling is a new enterprise may not be experienced enough to define their expectations for quality digital products (Porter, 2003; McNeil & Robin, 2012). In collaboration with the North Central Regional Technology in Education Consortium (NCRTEC), Porter developed holistic and analytic scoring guides based on traditional genres of writing to assess student-authored digital products. With emphasis on evidence of learning "centered around critical questions, deeper levels of understanding, and original thinking that goes beyond existing information and patching together facts," the scoring guides represented an important milestone in the evaluation of student-authored digital work. Thompson (2005) and Sadik (2008) also advocated the use of rubrics for assessing the quality and content of digital stories.

Student-centered and constructivist teaching practices are generally aligned with classroom use of technology for project-based learning (Becker & Riehl, 2000; Pitler et al., 2007, p. 3). In addition to advocating teachers' use of rubrics, constructivist approaches incorporate the use of rubrics for self-assessment and peer assessment (Dexter, Anderson & Becker, 1999; Oosterhof, Conrad & Ely 2008). Morris (2013) found that middle grade students who were required to undergo a teacher-designed formal self-assessment of their digital stories also sought opportunities for peer assessment and voluntarily engaged in informal self-assessment throughout the project.

McNeil and Robin (2012) proposed an evaluation framework for digital storytelling with three main categories: 1) evaluation during the design process, 2) evaluation during the development process, and 3) evaluation after the project is completed. Each category was further divided into self-evaluation, peer-evaluation, and teacher evaluation. The authors underscored the importance of formative assessment during the design process, noting that assessment of students' storyboards allows the teacher to identify gaps and strengths and to provide additional support, if needed:

> During this phase, students write the script for their stories, collect relevant images to illustrate their story, and determine how the story should be organized. This is a critical time in the creation process since poor quality or meaningless images and a disjointed script can have a powerful effect on the success of the digital story.

Study Method

A qualitative case study approach was used in this investigation because contextual conditions were relevant to the phenomenon under study, and the focus of the study was to answer "how" and "why" questions (Yin, 2003). The researcher worked closely with the participants, allowing teaching and learning to unfold naturally, while providing opportunities for participants to describe their experiences and share their insights to reveal the essence of the phenomenon. Using Yin's (2003) approach, the units of analyses were the processes of: 1) monitoring student learning, and 2) assessing the acquisition of knowledge, skills, and understanding. The purpose of this research was to describe how teachers worked with their students and to provide insight into the "why" of their instructional decisions and assessment strategies.

Qualitative data were collected over a period of six weeks. Data sources included a semi-structured interview, conducted separately with each teacher participant. The interviews took place during the monitoring and assessment phases of the project. Researcher field notes were recorded on a classroom observation guide during nine classroom observations. Notes from informal conversations with teachers during non-teaching time were kept in a journal and also comprised a substantial part of the data set. Additionally, the researcher had access to teacher-created artifacts, relevant correspondence between the teachers, student work in progress, a project wiki, an online peer review environment, and students' final digital stories.

Data were analyzed using an iterative process. Initially, the data from each source were organized by research question. To place feasible limits on the study, data were further examined against propositions from relevant literature. Linking the data to propositions enabled the researcher to describe and explain the phenomena of teacher practice in terms of existing theoretical frameworks (Yin, 2003). Analysis of the study data was linked to the following propositions:

1. Use of the Internet for pedagogical support poses unique challenges as teachers anticipate, monitor and assess student learning (Wallace, 2004).
2. Teaching with technology requires the simultaneous integration of content knowledge, pedagogical knowledge, and technological knowledge (TPACK); expert teachers demonstrate fluency and flexibility not only in the key domains of TPACK (C, P, and K), but also in the manner in which these domains

interrelate (Koehler, Mishra, & Cain, 2013).

Study Context

Setting. This study took place in a suburban middle school located 15 miles from an urban center in southwestern Ohio. Serving approximately 1300 students in grades seven and eight, the school was organized into ten interdisciplinary heterogeneous teaching and learning teams. Commitment to the developmental needs of middle school age children was evident in every corner of the building. Signage in faculty work areas reminded adults of the important role they played in the lives of the children they taught. Student art graced the hallways; the prevailing themes were kindness, integrity, creativity and community.

On the website, the first of the school's core values underscored the importance of decision-making based on students' needs: "School is organized around students and how they will be inspired or impacted." Teacher teams were empowered to make decisions about how they used time and physical spaces within the building. This flexibility allowed the participants in this study to negotiate within their teams for extra project work time and the use of a multi-media center in the building. Using a flexible block schedule, the participants in this study typically met with their English language arts students for 50 minutes during four days of the week, and for 90 minutes one day of the week.

Technology. The use of technology for teaching and learning was a high priority in the study setting. The website boasted, "Technology is integrated into everything we do." In 2011, the district initiated a *Bring Your Own Device* program with the middle school as its first implementation site. The program, called "Power Up," allowed students to choose the type of computing

device that worked best for them. The district provided cloud-based software that worked equally well on a Windows or Macintosh platform. Each student carried a laptop or a tablet throughout the day. Most students brought their own devices to school, but 10-15% of the population used laptops available for check-out. All classrooms were outfitted with computer projectors and screens, and many were also equipped with interactive whiteboards. Wireless connectivity was available throughout the building, and the signal was especially strong in the area designated as the Learning Commons. As students prepared to begin class, they were more likely to settle in with a computer in front of them than to open a textbook. Although computing devices were always available to students, there was an understood netiquette in place: When a teacher signaled, "Eyes front; monitors down," students understood that their attention must shift from the screen to the front of the classroom.

Participants. The participants in this study were two grade-seven English language arts teachers who worked together on an interdisciplinary team. (Pseudonyms have been used for the teachers and the school to ensure anonymity of the participants and the setting.) Together, the teachers were responsible for 240 students, whom they co-taught in groups of approximately 60, on a routine basis prior to the onset of the study. The teachers had access to a double classroom, with a room divider that they could open or close based on need. This classroom contained desks and six large tables for students, along with two teacher work areas.

In addition to the double classroom, the study participants worked with their students in Learning Commons. Formerly a media center, the Learning Commons had been renovated with input from students. A key factor in the redesign was ergonomics;

the space had to be physically comfortable and well-equipped for teaching and learning. A sofa and chairs formed a conversational seating area near the entrance of the room. Two additional seating areas were available near the book stacks. Across the back wall, three tiered levels of carpeted seating provided an area for students to sit comfortably during whole group segments. Laptop carts were situated in an area near the check-out station. An over-sized screen, released from the ceiling, along with projection equipment and stereo audio, allowed students and teachers to display their work in a manner that rivaled a small theater. Rectangular wooden tables and comfortable chairs provided ample seating for sixty students and their computing devices.

Each school day began with a ten-minute Advisory meeting, which was followed by four hours of "core" classes and a lunch period. During this four-hour period, the study participants co-taught English language arts to four groups of grade seven students. The last part of the day was designated for elective "encore" classes. The study participants used the elective periods for teamwork and planning.

Monica. Monica had thirty-one years of teaching experience at the time of the study; eleven of those years were at Maple Middle School. In addition to her role as an English language arts teacher, Monica was also the director of the drama program and a cheerleading coach. In stark contrast to the stereotype of the veteran teacher, Monica was an avid user of technology who actively sought out new applications with potential for her students. She was energetic, enthusiastic, and willing to take risks in her teaching practice.

Bethany. Bethany had been teaching for nearly six years at the time of the study. All of this experience was at Maple Middle School. Like Monica, Bethany coached cheerleading in addition to her responsibilities as a grade-seven English language arts teacher. While a competent user of technology, Bethany was less confident in her technology skills than Monica. She was willing to integrate technology into her lessons, but she frequently deferred to Monica when planning for its use.

Procedures and Data Sources

Prior to the launch of the digital storytelling unit, the researcher met with the study participants during their shared planning time. The study participants explained their instructional goals and described their initial plans for the integrating technology into the next unit of study. The plan was to introduce a digital storytelling project during the first week of their study of the novel *The Outsiders*. The study participants described their technology experiences and explained "Power Up," the district's bring-your-own-device technology initiative. Both teachers had used a variety of technology applications, including video and video editing; however, neither teacher had worked specifically with digital storytelling. The researcher and the participants established a calendar for the study, which included dates for classroom observations and interviews.

Project Wiki. The researcher created a password-protected wiki for the digital storytelling project. Only the teacher participants, their students, and the researcher had access to the collaborative work area. Initially, the teachers in the study used the wiki to share learning resources with students, such as Internet links to literary terms, examples of literary elements and models of digital stories. As the unit progressed, the use of the wiki evolved to include students' digital story planning artifacts and their completed digital stories.

Throughout the study, the researcher was able to observe the development of the wiki.

Classroom Observation Guide. The researcher used a classroom observation guide to record notes during each of the nine classroom observations. The observation guide had three sections: 1) description of the physical environment, 2) description of instructional activities and learning arrangements, and 3) description of the teacher role(s) and interactions with students. After each classroom observation, the researcher was afforded an opportunity to debrief with the study participants to verify the accuracy of the observation and to ask clarifying questions.

Interview Guide. The researcher interviewed the study participants separately, but using the same question sets.

Separate interviews served two primary purposes: 1) they provided ample time for elaboration, and 2) they circumvented the possibility of interview sessions being dominated by either of the participants. Additionally, separate interviews provided opportunities to compare perspectives and further examine each teacher's unique contribution to the collaborative effort. Each interview was recorded using a digital voice recorder to ensure accuracy during transcription. Audio recordings were immediately transcribed following each interview, allowing the researcher to clarify the transcriptions with the study participants, if necessary, during subsequent site visits. The interview protocol is presented in Table 1.

Table 1
Interview Guide

Research Question	Interview Questions
How do teachers monitor learning during a reading/writing unit that incorporates digital storytelling?	1. What strategies/techniques did you use to support your students while they were developing their digital story projects? 2. How did you ensure that students were staying "on track" while they were working on their projects?
How do teachers evaluate acquisition of key skills, concepts and understandings through student-created digital stories?	3. How did you evaluate student work at the end of the unit? 4. Are there any changes you will make to the evaluation procedure if you implement this project again?

Artifacts of Teaching and Learning. Throughout the study, the researcher had access to teacher-prepared materials. These included study guides, writing prompts, models and examples, templates, graphic organizers, and rubrics. Most of the instructional materials were presented to students in a digital format. The researcher was also able to view the work of individual students and small

groups as the unit of study progressed. Student work included brainstorming and planning documents, storyboard scripts, digital stories in progress, and final "published" digital stories.

Researcher Journal and Email Correspondence. The researcher kept a journal during the study to record notes from informal conversations with the study participants between class periods and

during their planning time. These conversations helped the researcher to clarify what had been observed and to increase the accuracy of the field notes. Additionally, the researcher was included as a recipient on relevant email correspondence between the study participants. Communication through email was an important data element in this study as it served to chronicle the collaboration between the study participants and helped the researcher to connect what was happening in the classroom to the teachers' intended instructional design.

Data Analysis

Multiple data sources were used to enhance data credibility in this study (Yin, 2003). However, the abundance of data made it necessary to focus the analysis on the original research questions and the propositions from the literature. The researcher first examined each data set independently against the research questions and secondly against the propositions from relevant literature. In the final phase of analysis, data sets were converged, organized by the research questions and linked to the propositions.

Findings

Prior to the start of the investigation, the study participants had established routine uses of technology in their classrooms. Their students were comfortable retrieving assignments and instructional resources in Schoology, a learning management system. They had used Google Docs for writing assignments and were accustomed to collaborating with peers using shared access to files. They had also used TodaysMeet for online discussions and peer review of writing and projects. Students routinely used Symbaloo, a social bookmarking tool that allowed them to share Internet resources with one another and their teachers. Additionally, students had used Zotero to organize and cite media files. Students were introduced to two new tools during the course of the investigation: Photo Story 3 digital storytelling software and PBWorks wiki. The study participants used the CCSS to identify learning goals for the project:

- Cite several pieces of textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
- Determine a theme or central idea of a text and analyze its development over the course of the text; provide an objective summary of the text.
- Analyze how particular elements of a story or drama interact (e.g., how setting shapes the characters or plot).

The study participants adapted the process of writing model to the process of creating digital stories. The focus on process included frequent progress checks. Table 2 illustrates the parallels between the writing process and the digital storytelling process and identifies how the study participants monitored learning during each phase.

Table 2

Parallels between Writing Process and Digital Storytelling Process

Writing Process	Digital Storytelling Process	DS Monitoring Checkpoint

Prewriting
• Brainstorming ideas
• Selecting a topic, thinking about the story message and the audience
• Planning – using clusters, webs, outlines, lists, etc.
	Design Phase
	• Brainstorming ideas
	• Selecting a topic, thinking about the story message and the audience
	• Creating a storyboard
	    o Selecting images
	    o Drafting the story script
		✓ Collaborative brainstorm document in project wiki
		✓ Story proposal in Google Drive
		✓ Storyboard conference (focus on content – script quality and organization, image selection, clarity of message)

Drafting • Organizing information and ideas into sentences and paragraphs	Development Phase • Producing the story by organizing images, text, and voice narration into frames • Incorporating a music soundtrack to communicate mood/complement the story message	✓ Production conference (face-to-face with teacher) – focus on music selection, narration, image arrangement, timing and citations for media
Revising • Reordering, replacing, enhancing/refining the message • Checking for smooth transitions between paragraphs	• Reordering, replacing, enhancing/ refining the message • Determining frame motion and duration • Selecting transitions between frames	✓ Photostory 3 project file checklist in Google Drive ✓ Peer group review and feedback in TodaysMeet
Editing • Correcting surface features (grammar, punctuation, spelling)	• Correcting technical issues (sound/image quality, timing) and text surface features	✓ Editing checklist in Google Drive
Publishing • Sharing the final product with peers or a larger audience	Project Completion • Sharing the final digital product with peers or a larger audience	✓ Posting on class wiki ✓ Presentation to class ✓ Summative assessment/evaluation for final grade

The observed class periods began with a mini lesson, lasting 10 to 15 minutes, and continued with a small group activity in which students discussed some aspect of the novel and recorded their answers. The remaining class time was used for students to work on their digital story projects.

During facilitated work time, one teacher conducted conferences with students while the other was available to assist students while they worked on their projects. The study participants used checklists and anecdotal notes during conferences to keep track of student progress.

During the design phase, the study participants expected students to identify and discuss literary elements in the novel, such as theme, characterization, conflict, and setting. They sought evidence of understanding through a collaborative brainstorming activity in which student teams generated central ideas for their digital stories. The story proposal was the next checkpoint in the design phase. Each student wrote a proposal to describe the literary element to be addressed in the digital story and to share initial ideas for developing the story with images and text-based evidence. The final checkpoint in the design phase was the storyboard. Students could not advance to the development phase (i.e., story production in Photo Story 3) until their storyboards had been approved by a teacher. At this juncture, the study participants examined the story script for organization, coherence and clarity of ideas. They also examined the quality and content of images chosen for inclusion in the story.

Students shared all of their project-related files with their teachers using Google Drive, a free cloud storage service that can be adapted for education environments. This allowed the study participants to monitor students' progress online and intervene when they saw a student struggling. Bethany viewed this monitoring as a critical component of the project: "Having formative assessments along the way—and chunking the parts of the project itself— helps to monitor the kids, especially the ones who have trouble staying on task or doing exactly what they're supposed to do." During the design phase, online monitoring also allowed the teachers to work more efficiently. Bethany explained:

> I thought monitoring the kids was pretty easy because I could look at their Google Docs. What I would do—at home or during my planning time or even during class that day—was look at

their Google Docs, especially for the kids who might be falling behind in relationship to the rest of the class. I think that really helped—more so than having it on paper—because you don't have to collect their papers every day.

Monica observed that students seemed more inclined to stay on task when they knew that their teacher was viewing their work:

> Whenever students begin working with a file, I ask them to immediately share it with me [through Google Drive]. When they come into class, and all through the class period, I routinely have 25 tabs open on my computer. I can't look at all of them at once, but [the students] don't know which one I'm looking at. All they get is a little blurb on the top of their screen that tells them "Ms. _____ is viewing." So they know that – at any point – I either am looking at their work or I *can* look at their work to see what they're doing. The other thing about Google [Drive] is the revision history. So if I click on revision history in the document, I can see—in green—what the student did today.

Teacher conferences continued during the development phase, where students used Photo Story 3 to arrange images, text, narration and music into a movie sequence. Conferences focused on students' production choices and the impact of those choices on the audience. At this point, monitoring students' computer work became more challenging for the study participants. The Photostory projects were no longer single files; rather, they were a collection of connected media files stored on the hard drive of each student's computing device. Whereas, during the design phase, the conferencing teacher could open a student's file on her laptop; during the development phase, the teacher had to view the student's work on the student's

computer. Interestingly, students began to seek more input from their teammates during this phase. The study participants observed students using the preview feature in Photo Story 3 to check timing and transitions and to engage others at their table in a critique of the work in progress.

Students used a project checklist and the digital story rubric (Figure 1) to self-assess their work and make revisions during the development phase. When the story was

ready for formal peer review, each student presented to the team. Guided by elements in the rubric, teammates provided critical friend feedback in a conference room in TodaysMeet. Figure 2 shows a screen capture from a peer review session in TodaysMeet. (Last names have been removed from the images to protect the identity of students and the study participants.)

Figure 1. Digital Story Rubric

CATEGORY	4	3	2	1
		Digital Storytelling: *The Outsiders*		
	Rubric Made Using Rubistar: http://rubistar.4teachers.org			
Purpose	Establishes a clear purpose early on and maintains a clear focus throughout.	Establishes a purpose early on and maintains focus for most of the presentation.	There are a few lapses in focus, but the purpose is fairly clear.	It is difficult to figure out the purpose of the presentation.
Awareness of Audience	Strong awareness of audience in the design. Students can clearly explain why they felt the vocabulary, audio and graphics chosen fit the target audience.	Some awareness of audience in the design. Students can partially explain why they felt the vocabulary, audio and graphics chosen fit the target audience.	Some awareness of audience in the design. Students find it difficult to explain how the vocabulary, audio and graphics chosen fit the target audience.	Limited awareness of the needs and interests of the target audience.
Musical Selection	Music stirs a rich emotional response that matches the story line well.	Music stirs a rich emotional response that somewhat matches the story line.	Music is not distracting, but it does not add much to the story.	Music is distracting, inappropriate, OR was not used.
Image Selection	Images create a distinct atmosphere or tone that matches different parts of the story. The images communicate through symbolism and/or metaphors.	Images create an atmosphere or tone that matches some parts of the story. A few of the images communicate symbolism and/or metaphors.	An attempt was made to use images to create an atmosphere/tone but it needed more work. Image choice is logical.	Little or no attempt to use images to create an appropriate atmosphere/tone.
Narration	Voice quality is clear and consistently audible throughout the presentation.	Voice quality is clear and consistently audible throughout the majority (85-95%) of the presentation.	Voice quality is clear and consistently audible through some (70-84%)of the presentation.	Voice quality needs more attention.
Accuracy and Detail	The story is told in a meaningful way -- with exactly the right amount of detail throughout. Care is taken to present information accurately. The story is neither too short nor too long.	The story composition is typically good, though it seems to drag somewhat OR need slightly more detail in one or two sections.	The story seems to need more editing. It is noticeably too long or too short in more than one section.	The story needs extensive editing. It is too long or too short to be informative or compelling.
Citation of Sources	Information, music, photos and/or video clips are properly cited in a Credits frame at the end of the story.	Most of the information, music, photos and/or video clips are properly cited in a Credits frame at the end of the story.	Some of the information, music, photos and/or video clips are properly cited in a Credits frame at the end of the story.	The Credits frame is missing from the digital story.

Figure 2. Peer Review Conference in TodaysMeet

Students made final revisions in response to peer feedback before submitting their digital stories for teacher evaluation. Monica commented on the quality of the review sessions:

> If anything, I think this year I am most proud of the kids being able to honestly analyze one another's work—which I think is a great skill in itself. We have been working on this all year long with peer review and editing. We've been asking students to give feedback to one another early on and to ask questions about the work—like "What are you trying to accomplish here?" And they're using the rubric to have conversations about it.

While the design and development phases provided opportunities for the study participants to formatively assess student work, the summative assessment for the unit included the final digital story, a brief paper describing the creative process and story purpose, and the presentation of the story (in the wiki and before an audience). The study participants wanted students to demonstrate a deep understanding of the literary elements they had chosen for their digital stories. One of the challenges they faced was making sure that students understood this as the central goal of the project. Bethany described how students who were accustomed to "getting everything right the first time" struggled with technical elements of the story production because they wanted the final product to be "perfect." She also worried that some students were more interested in designing a great video than they were in demonstrating their understanding of literary elements. For instance, one student focused her story on bullying but did not connect the topic to the character conflicts in the novel. Bethany explained:

> I wanted them to ask "tough questions" about the novel, but I don't think every kid was able to get to that point. A lot of them did, but there were some who didn't. [On the final projects] I found myself asking, "Where are your connections to *The Outsiders*?"

At the end of the unit, the study participants identified challenges and discussed changes they would make in the next cycle of teaching with digital storytelling. Both concluded that the digital story unit encouraged their students to think deeply about the novel. In addition to attending to the traditional elements of a composition (i.e., purpose and organization), the digital story project prompted students to consider how images and music soundtracks

could be used to communicate a message to a specific audience. When asked if she would incorporate digital storytelling again, Bethany explained,

> Definitely, but there are some things I'd do differently. I really liked the proposal assignment we used at the beginning. But I think the next time we do this, I'll spend more time asking students, 'How are you going to show that? How are you going to make the connections to the novel? Which actual parts of the story are you going to use? How does it relate to your understanding of the real world?' Asking those questions ahead of time will help students better prepare. But in general, I think the outcome was great. Any challenge we had could be overcome in the planning stage.

In spite of the challenges, the study participants reported greater success in meeting the unit learning goals through the digital storytelling project than through the traditional end-of-unit writing assessments they had used in the past. After viewing and scoring students' work, Bethany commented, "I don't think we would have seen the quality of work that we got if we had said, 'Write an essay.'" The study participants also observed that the medium of digital storytelling motivated students to do their best work. Bethany reported that students were engaged in higher order thinking—making text-to-text comparisons and considering the nuances of their media choices. Furthermore, the teachers were pleased with students' problem-solving skills and their willingness to learn from one another.

Discussion

The participants in this study adapted the process writing model to the monitoring of students' digital story projects. The pedagogy of that model was familiar,

allowing the teachers to set monitoring checkpoints throughout the project. Co-teaching—with one instructor facilitating students' project work while the other conducted conferences—allowed the study participants to intervene with struggling students. Frequent monitoring revealed most, but not all, of students' misconceptions about theme, characterization, and conflict in the novel.

The ability to view students' work in progress in Google Drive mitigated some of the challenges, identified by Wallace (2004), of using the Internet for pedagogical support. Monitoring was most feasible during the design phase, but it became more difficult as students moved into the development phase of the project. At that point, the study participants were not able to quickly assess students' work in progress. As a result, some students didn't get as much teacher support as others. Interestingly, students became more reliant on one another for assistance and feedback during this period. In addition to participating in a formal peer assessment, they evaluated one another's work informally during project development sessions. The study participants encouraged students to provide assistance and suggest improvements to their peers. Although gauging the quality and usefulness of peer feedback can be challenging, the study participants were able to monitor – both in real time and post-conference – the feedback students provided to one another in online conference rooms in TodaysMeet.

The study participants required students to self-monitor using a project checklist and an editing guide. Additionally, each student completed a self-assessment using the digital story project rubric. These components of self-assessment were central to the student-teacher conference sessions. Not only did they inform the conversations between learners and instructors, they also

provided a means for students to document their processes and stay on track.

The use of the digital storytelling rubric for peer assessment, self-assessment, and teacher assessment was in keeping with the process writing model and constructivist approaches to learning. The study participants focused on literary elements in whole group lessons and student conferences. However, the rubric did not emphasize the importance of demonstrating understanding of literary elements in the digital story. The lack of explicit criteria for literary analysis may explain why some student projects focused on the author's personal response to the novel rather than on theme, characterization, or conflict. Including criteria for elements of literary analysis in the rubric may have made this expectation clearer.

While each of the study participants demonstrated competence in content, pedagogy, and technology, co-teaching allowed the pair to take advantage of one another's strengths. Figure 2 illustrates the study participants' approach to instruction using within the TPACK framework (Mishra & Koehler, 2006). The combined knowledge of both teachers made the challenge of simultaneously attending to content, pedagogy, and technology easier to manage.

Figure 2. TPACK framework with digital storytelling.
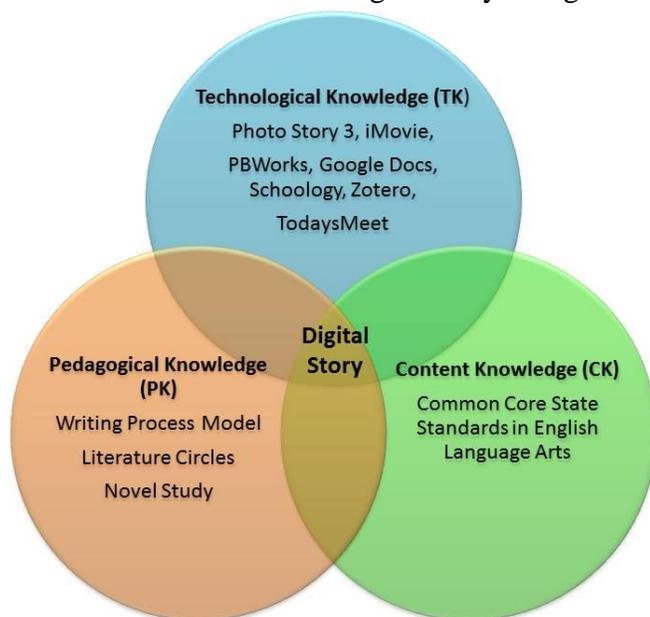
The study participants viewed themselves as coaches and facilitators, whose chief responsibility was to create a classroom climate conducive to the pursuit of knowledge, skills, and understanding. They encouraged students to rely on one another for help with technology tasks. They openly praised students who found "work-arounds" or short-cuts, inviting these students to teach the class what they had discovered. The physical context of the study setting also influenced the learning environment. Facilities such as the Learning Commons and the double classroom afforded the study participants and their students the space they needed to work. The bring-your-own-device initiative created a climate in which using technology was a normal, daily activity rather than a special event. These factors, in addition to the

knowledge and skill of the teachers, contributed to the positive outcomes of the digital storytelling project.

Implications for Teacher Education

While this descriptive case study may provide insight into the "how" and "why" of emergent teacher practice in the area of digital storytelling, the findings in this investigation cannot be generalized to all teachers. Additionally, factors beyond the scope of teacher practice – including school culture, facilities, and availability of technology resources – undoubtedly influenced the outcomes of the study. Nevertheless, several implications for teacher education programs might be drawn from this investigation:

- The ability to use technology tools to communicate, conduct research, and create digital media is embedded throughout the *Common Core State Standards for English Language Arts*. Teacher education programs must focus not only on how to use digital tools and resources but also on how to assess students' digital products.
- The process writing model, familiar to most English language arts teachers, provides a structure for organizing and monitoring student digital story projects. Teacher candidates may more readily embrace digital storytelling if they can connect the two processes.
- Incorporating concepts such as cloud storage, document sharing, and collaborative digital workspaces into instructional methods courses will help teacher candidates develop a better understanding of how technology enhances writing instruction and project-based learning.
- Requiring learners to document their progress helps teachers to keep track

of online work. Providing teacher candidates with opportunities to create rubrics and project checklists using online tools such as [Rubistar](#) and the [Project-Based Learning](#) website would be beneficial to their preparation.

- Teacher educator programs that address instructional technology and content methods in separate courses are missing opportunities to help pre-service teachers connect their content knowledge, pedagogical knowledge, and technological knowledge into a cohesive approach to instruction.

Conclusion

In spite of increased pressure to integrate technology, many English language arts teachers continue to rely on traditional methods and assignments. There are a variety of reasons for this reluctance, not the least of which is the difficulty of assessing student-authored digital products. The National Center for Education Statistics (2010) reported that only 23% of teachers felt prepared to integrate technology into instruction. Of those who did use technology, the primary purpose was to present information to students. The TPACK framework (Mishra & Koehler, 2006) provides insight into the complexity and challenges of technology integration. Further research into the conditions and resources teachers need to develop TPACK is necessary if we are to make progress. While traditional professional development has yielded limited results, practices such as co-teaching and engagement in professional learning communities appear to be viable pathways for professional growth. Resources such as the National Writing Project's [Digital Is](#) website, where ELA teachers share their strategies for integrating technology, also show promise. As we continue to explore effective approaches to

technology integration, considering the implications for meaningful assessment of

student authored digital products will be equally important.

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