RESPONSES OF LISTENER-VIEWERS IN DIGITAL STORYTELLING: COLLABORATIONS IN THE INTERMEDIATE CLASSROOM AND THE MIDDLE SCHOOL LIBRARY

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Storytelling in its traditional form, with active participation by tellers and listeners, is a valuable model for contemporary library and classroom experiences. Digital storytelling expands opportunities for storytelling in libraries, and reflects a continuity of innovative library services for children and students. For this study, "digital storytelling" is defined as a short, multimedia presentation of a story, created by students, under the guidance of school librarians or teachers. Because much of the literature and practice of digital storytelling emphasizes the creator, or teller, this research examines the response of the "listener-viewers" to explore and support in a digital environment the interactions afforded to audiences of traditional, live storytelling. This research study is a mixed methods investigation centered upon participant-observation of digital storytelling in intermediate classroom and middle school library settings. The research findings show six prominent themes representing how students respond to and engage in digital storytelling, presented in the study in a conceptual model. The themes are Engagement, Action, Emotions, Learning, Similar Experiences, and Next Steps. Key components of digital storytelling as a classroom and school library activity are the "self" as a viewer of digital storytelling, formative and summative viewing practices, and how classroom teachers and school librarians teach and facilitate digital storytelling, including integration of technology and information literacies and collaboration.

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PREFACE

Style

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1.0 INTRODUCTION

1.1 STORYTELLING AS RELATED TO THE MISSION OF LIBRARY SERVICES FOR CHILDREN AND YOUNG ADULTS

Building a context for a study of digital storytelling prompts reflection on the story of humankind, as storytelling and narrative have origins among the first forms of human communication. Through story, humans explained and questioned the Earth and its phenomena, their relationships to one another, and their place in the world. Storytelling has a rich tradition, notably in history, literature, religion, and (in the modern era) folk art, but it has also evolved and expanded to assume a dynamic, contemporary presence across settings and functions. Diverse fields as distinct as medicine, religion, business, government, education, and information employ and experiment with storytelling and digital storytelling to investigate problems, interpret texts, consider perspectives, and describe events. For this study, "digital storytelling" will be defined as a short, multimedia presentation of a story, created by a student in a guided (not independent) setting. Characteristics and examples of digital storytelling projects are described in greater detail in the chapters that follow.

Librarians who tell stories, particularly those who serve children in schools and public libraries, stand on the shoulders of giants–the first children's librarians, who were talented storytellers, but also visionaries and fierce advocates for children's services. In the late 1800s

and early 1900s, children's librarians hosted story hours in urban public libraries. Children's librarians such as Effie Lee Power in Cleveland and, later in her career, St. Louis, and Charlotte Keith Bissell in Pittsburgh, and storytelling programming supervisors such as Anna Cogswell Tyler in Brooklyn led a new movement in librarianship, focusing attention and services on the unique needs of children.[1] Their endeavors required not only knowledge of books and literature, but also a creative and thoughtful approach to interacting with children.[2] Children's librarians engaged the children in the library space for specific moments in time by telling captivating stories, but they also inspired enjoyment of and dedication to reading and information activities that lasted in the children long after the stories had come to an end.

Though the history of storytelling and the path of storytelling in libraries are topics worthy of attention and study, this research centers on modern storytelling-related activities in libraries–specifically, the practice of "digital storytelling." Although storytelling in the traditional oral form is still practiced in school and public libraries (among numerous other settings), digital storytelling is a newer form of storytelling that is expanding opportunities for storytelling in libraries, while at the same time reflecting a continuity of innovative library services for children and students. Digital storytelling is an example of the 21st century iteration of the historical mission of children's library programs, which then, and still, supports literacy, captures the imagination, and establishes dispositions of lifelong learning. These outcomes are emphasized in the current mission of school librarians, as articulated by the American Association of School Librarians (AASL), a division of the American Library Association (ALA). Central to this mission is "empower[ing] students to be critical thinkers, enthusiastic readers, skillful researchers, and ethical users of information."[3] The themes of innovation,

reading, and literacy are also part of the Core Organizational Values and Strategic Plan of the Association for Library Services for Children (ALSC, also a division of ALA).[4]

1.2 DEVELOPMENT OF THE RESEARCH QUESTIONS AND METHODOLOGY

This dissertation presents research questions designed to study student listener-viewers of digital storytelling in intermediate and middle school settings. The questions are as follows:

(1) How do student listener-viewers respond to and engage in digital storytelling in school library/classroom activities in the intermediate classroom and middle school library?

(2) How do the student listener-viewer responses characterize digital storytelling as a storytelling activity in the school library/classroom?

This research study is a mixed methods study, primarily an ethnographic approach, with participant-observation of digital storytelling in intermediate classroom and middle school library settings. The study is a mixed methods design, with the recursive, "observing, noting, reading, thinking, observing, and noting" that Heath and Street assert represent the process of data collection in ethnographic research.[5] The research questions and methods are examined in greater detail in Chapter 3, Methodology.

Storytelling in its traditional form is a rich, strong model for contemporary library and classroom storytelling experiences. Through reading, teaching, researching, and writing about storytelling in libraries and the future of storytelling in libraries, I developed research questions

to study digital storytelling through the lens of more traditional storytelling. Digital storytelling has the potential to provide a rich storytelling and listening/viewing experience. This study examines the response of the audience, termed "listener-viewers," in digital storytelling projects, in order to explore and support in a digital setting the listener benefits inherent to the traditional, live storytelling model.

There are three main sources of theory from which I have developed the foundation for this research: (1) Louise Rosenblatt's theory of transactional response to reading, known more commonly as reader response theory,[6] (2) Margaret Mackey's theory of literacies across multimedia texts,[7] and (3) Brian Sturm's theory of the "storylistening trance."[8] Two essays on classical understanding of storytelling shaped my application of the theory, and provided inspiration and reference points for the research questions. These are the 1969 essay by Robert A. Georges, "Toward an Understanding of Storytelling Events,"[9] and the 1988 essay by storyteller Jack Maguire, "Sounds and Sensibilities: Storytelling as an Educational Process."[10] A review of these writings and additional literature across several disciplines is presented in Chapter 2. The findings of this study as interpreted through these theoretical frameworks are presented in Chapter 5.

1.3 SIGNIFICANCE OF THE RESEARCH

The listener-viewer in digital storytelling is important to study for numerous reasons. Most importantly, this study shifts the emphasis from the creators of digital stories to the listener-viewers. As described further in Chapter 2, much of the research on digital storytelling projects focuses on the creator. In order to investigate and characterize digital storytelling as a

storytelling activity in the school library and classroom, this study attends to the listener-viewers' experiences.

The findings of this research, presented in depth in Chapter 4, can add to a fairly small body of literature on digital storytelling in library and information science, and contribute to developing a theory or a model of the role of the listener/viewer in digital storytelling. As Brian Sturm's research demonstrates, there are conditions that support the engaged, focused state of the storylistening trance with potential applications in the classroom setting.[11] In terms of applied research, the findings can inform librarians and teachers who teach digital storytelling by providing an increased understanding of the listener experience, and insights on the value of viewing and listening to digital storytelling for learning. Included in Chapter 5 are recommendations for teachers and librarians to support effectively the listener-viewer experience in classroom and school library digital storytelling. This study will contribute to teaching and new media studies, as well as provide a sustainable line of research in storytelling in the information sciences.

The American Association for School Librarians *Standards for the 21st-Century Learner*, makes clear connections between learning in curricular subjects and the creative expression of ideas, and as such, digital storytelling is a valuable forum for relevant, authentic study of the development of 21st-century skills in K-12 students. There are several Standards for the 21st Century Learner relevant to this study, as listed in Table 1. The Standards are arranged into four categories, which describe what "learners use skills, resources, and tools to" do.[12] The Standards are listed at the left side of Table 1. Within each Standard are Skills, Dispositions in Action, Responsibilities, and Self-Assessment Strategies; those most relevant to digital storytelling are identified at the right.

Table 1. AASL Standards for the 21st-Century Learner relevant to digital storytelling in the intermediate classroom and middle school library.

Standards 1-4	**Skills, Dispositions in Action, Responsibilities, and Self-Assessment Strategies**
Standard 1 **Inquire, think critically, and gain knowledge.**	**1.2 Dispositions in Action:** 1.2.3 Demonstrate creativity by using multiple resources and formats
	1.3 Responsibilities 1.3.1 Respect copyright/intellectual property rights of creators and producers. 1.3.4 Contribute to the exchange of ideas within the learning community. 1.3.5 Use information technology responsibly.
	1.4 Self-Assessment Strategies 1.4.4 Seek appropriate help when needed
Standard 2 **Draw conclusions, make informed decisions, apply knowledge to new situations, and create new knowledge.**	**2.1 Skills** 2.1.2 Organize knowledge so that it is useful. 2.1.4 Use technology and other information tools to analyze and organize information. 2.1.6 Use the writing process, media and visual literacy, and technology skills to create products that express new understandings.
	2.2 Dispositions in Action 2.2.4 Demonstrate personal productivity by completing products to express learning.
Standard 3 **Share knowledge and participate ethically and productively as members of our democratic society.**	**3.1 Skills** 3.1.1 Participate and collaborate as members of a social and intellectual network of learners. 3.1.3 Use writing and speaking skills to communicate new understandings effectively. 3.1.4 Use technology and other information tools to organize and display knowledge and understanding in ways that others can view, use, and assess. 3.1.6 Use information and technology ethically and responsibly.
	3.2 Dispositions in Action 3.2.1 Demonstrate leadership and confidence by presenting ideas to others in both formal and informal situations. 3.2.2 Show social responsibility by participating actively with others in learning situations and by contributing questions and ideas during group discussions. 3.2.3 Demonstrate teamwork by working productively with others.
	3.3 Responsibilities 3.3.4 Create products that apply to authentic, real-world contexts. 3.3.5 Contribute to the exchange of ideas within and beyond the learning community.
	3.4 Self-Assessment Strategies 3.4.2 Assess the quality and effectiveness of the learning product.

Standard 4 **Pursue Personal and Aesthetic Growth**	**4.1 Skills** 4.1.3 Respond to literature and creative expressions of ideas in various formats and genres. 4.1.5 Connect ideas to own interests and previous knowledge and experience. 4.1.8 Use creative and artistic formats to express personal learning.
	4.3 Responsibilities 4.3.1 Participate in the social exchange of ideas, both electronically and in person. 4.4.5 Develop personal criteria for gauging how effectively own ideas are expressed.

1.4 CHARACTERISTICS OF TRADITIONAL STORYTELLING

An examination of traditional storytelling helps to illuminate the differences between traditional storytelling and digital storytelling. Key components of this discussion are writings on storytelling from storytelling organizations (primarily the National Storytelling Network, or NSN) and professional texts on storytelling, with a brief look at the growing popularity of storytelling in different forms. It is important to note that literature on storytelling reflects its interdisciplinary nature. As storyteller and scholar Jo Radner explains in a 2004 panel of storytelling faculty members and storytellers, storytelling is a field engaged in a self-reflective process of articulating its boundaries and developing research scholarship.[13]

According to the National Storytelling Network, a definition of storytelling for practitioners is "the interactive art of using words and actions to reveal the elements and images of a story while encouraging the listener's imagination."[14] Further, NSN establishes that storytelling is interactive, and that "the responses of the listeners influence the telling of the story. In fact, storytelling emerges from the interaction and cooperative, coordinated efforts of

teller and audience."[15] This level of interaction fosters immediacy and a tight connection between the teller and the audience.

NSN affirms that storytelling is intended to capture the imagination of the listener, a state constructed by the listener's participation in the storytelling event:

> The storytelling listener's role is to actively create the vivid, multi-sensory images, actions, characters, and events—the reality—of the story in his or her mind, based on the performance by the teller and on the listener's own past experiences, beliefs, and understandings. The completed story happens in the mind of the listener, a unique and personalized individual. The listener becomes, therefore, a co-creator of the story as experienced. [16]

Thus, NSN identifies a very clear and active role for the listener in a storytelling setting. Storytelling instructor and children's librarian Carol Birch emphasizes the dialogic nature of successful storytelling; in fact, she considers it an expectation of a storytelling audience that their presence "help[s] to create a singular occasion," an iteration of a storytelling experience that cannot be duplicated.[17] Storyteller and author Margaret Read MacDonald refers to storytelling as "an audience-shaped art form," in which "the tale is only one part of the story event."[18] Table 2 presents roles of storyteller and listener in traditional storytelling.

Table 2. Roles and behaviors of storyteller and listener in traditional storytelling.

Storyteller	Listener
Creates trust in the listener, creates sense of and rapport with the listener	Trusts the storyteller, feels sense of rapport
Creates and stimulates mental images for the listener through storytelling	Sees images of the story in the mind's eye through referential and experiential interpretations
Tells a story with these components: characters, intent, actions, struggles, and details;[19] as teller, enters into dialog with listener	Listens to and follows the story, as listener, enters into dialog with teller
Tells a story live, usually in the same room as the listeners	Listens to a live story, usually in the same room as the teller
Performs gestures or movements, uses body language, uses props to support telling the story	Observes the teller's use of gestures, movements, body language, and props as part of the listening and viewing experience
Provides opportunities for interaction, participation, response, dialogue; in turn, responds to listeners' responses and reactions	Responds to teller's invitation (which may be overt or less explicit) to participate vocally, with actions, in other observable ways, such as body language
Adjusts and improvises content, pace, timing, vocabulary, dialog according to listeners' responses and needs of the audience; connects this audience with this story[20]	Demonstrates needs through feedback, observable behaviors (e.g., eye contact) and/or inherent qualities (e.g., age)
Creates and participates in a unique, singular storytelling experience via his or her telling role in the storytelling process	Creates and participates in a unique, singular storytelling experience in a time and place via his or her listening role in the storytelling process
Provides the focal point of a shared, live experience for the audience	Becomes part of a group of listeners and part of the community in the space
Performance and dramatic appeal may calm or energize the audience[21]	Show or feel emotional response or connection

Other requisite qualities of storytelling, according to NSN, are that it uses words and actions or vocalizations (distinguishing storytelling from dance and mime), and that it presents a story, though what constitutes a "story" may differ among cultures.[22] Storyteller and author

Kendall Haven defines story as, "a detailed, character-based narration of a character's struggles to overcome obstacles and reach an important goal."[23] Haven differentiates stories from narratives. Stories can be narratives, but narratives are not necessarily all stories, as narratives may also be more plot-based or information-based accounts that leave the connections of context, meaning, and relevance to the reader.[24]

There are new dimensions to storytelling in libraries and in culture today, including a heightened interest in storytelling for all age groups and new forums for storytelling. Traditional storytelling has a dynamic, national and local presence in the United States, with state liaisons of the National Storytelling Network in every state; popular national and regional festivals such as the National Storytelling Festival in Jonesborough, Tennessee; Tellabration, a worldwide storytelling event held in libraries, community centers, and schools each November; and Special Interest Groups of NSN that support storytelling in higher education, healing professions, organizations, for youth, and in religious settings.[25] Versions of storytelling have made their mark in popular culture in such programs as the stage show and podcast, *The Moth*[26], as well as the NPR program and podcast *This American Life*,[27] and in StoryCorps, often heard on NPR, a traveling program that invites families and friends to record personal interviews, which are facilitated by StoryCorps staff, professionally recorded, then added to a Library of Congress collection.[28]

Storytellers Bill Mooney and David Holt, storytellers and authors of *The Storyteller's Guide*, maintain the mantra, "stories aren't stories until they're told" in explaining the value of telling stories to help us understand ourselves and one another.[29] Storytelling in diverse forms attracts an audience growing accustomed to user-created, Web 2.0-type interactions, and digital storytelling synthesizes qualities of polished, stage storytelling with the accessible, personalized

nature of popular storytelling offerings, venues and formats. For these reasons, digital storytelling is an area of growing emphasis in public library programming, especially programming for young people, and it has also grown in popularity in learning activities in school libraries and K-12 classrooms.[30]

1.5 UNDERSTANDING DIGITAL STORYTELLING

1.5.1 Characteristics of Digital Storytelling

The level of complexity of the story and the interpretations of "digital" range widely in digital storytelling activities, from a narrated photo montage, to video clips with text captions, to Skype-situated readings of picture books. Robin identifies several applications of digital storytelling in the K-12 classroom, including personal narratives, informational or instructional stories (including those developed by teachers to illustrate content), and stories that recount historical events.[31] Both of Haven's aforementioned classifications of "stories" and "narratives" are found in examples of digital storytelling.

"Digital storytelling" is a term used across disciplines, from education to entertainment[32]–not just in libraries–and the definitions and descriptions vary just as widely. Elements common across applications of the term are as follows:

- Use of "off-the-shelf" technology to create and display the digital story
- Story or narrative framework
- Use of multimedia–photos, video, music, audio, narration, and/or images

- Some level of personalization by the author(s)/creator(s)
- Small-scale productions that are short in length
- Development under the supervision of an expert, teacher, or facilitator

The concept of digital storytelling as a product of "off-the-shelf" technology and the work of non-professionals is critical in distinguishing digital storytelling from a short film or movie. In their book *Multimodal Discourse: The Modes and Media of Contemporary Communication* (Hodder Arnold, 2001), Kress and Van Leeuewen describe a continuum of communication "strata" that people employ to express and process meaning. Their illustration of everyday conversation versus the work of professional voiceover specialist is a helpful reference for understanding digital storytelling. In everyday conversation, people incorporate fairly seamlessly the different skills, or strata, required to make and understand speech. These include discourse (socially situated knowledge), design (conceptualization), and production (articulation of the event). However, a piece performed by a professional voiceover specialist represents a division of labor among professionals, in which experts provide such components as content for the production (discourse), script writing and research (design), and sound engineering (production).[33]

In this comparison, digital storytelling is akin to everyday conversation, where non-experts combine different strata to communicate ideas, images, stories, and narratives. Although students in a classroom setting may share the work and the stories may take the shape of a "film," the division of labor is not among professionals, which distinguishes digital storytelling from feature films or movies, even those that may be short in length. Another common (though

not requisite) aspect of classroom or library-situated digital storytelling is the "showcase" or in-person performance, with the audience and creators of the project together in the same space.

1.5.2 Defining Digital Storytelling

Selected definitions of digital storytelling vary from organizations and practitioners, and the distinctions among them reflect their objectives and contexts. The University of Houston maintains a website entitled, "Educational Uses of Digital Storytelling," which defines digital storytelling as

> "the practice of using computer-based tools to tell stories. As with traditional storytelling, most digital stories focus on a specific topic and contain a particular point of view."

The website offers cross-disciplinary examples of digital storytelling as a teaching tool, though most of the examples seem to present teacher-created work that would be used for instruction on a topic, such as kitchen and food-themed vocabulary and grammar for ESL learners. The site provides rubrics and guidance for assessing K-12 student-created digital storytelling projects. [34]

Kelly Czarnecki, Teen Librarian, ImaginOn, Public Library of Charlotte and Mecklenberg County, describes digital storytelling as "the act of using sound, images, and video to form a narrative" in the ALA TechSource *Library Technology Reports* edition, "Digital Storytelling in Practice."[35] This definition reflects Czarnecki's broad approach to digital storytelling as it is used in public libraries, academic libraries, and museums.

Leslie Rule, Producing Supervisor of the Center for Digital Media at KQED, a public television and radio network in Northern California, presents a definition that focuses on the media and communicative elements, with digital storytelling as,

> "the modern expression of the ancient art of storytelling. Digital stories derive their power by weaving images, music, narrative and voice together, thereby giving deep dimension and vivid color to characters, situations, experiences, and insights."

Her discussion of digital storytelling appeared in a 2010 article in *Knowledge Quest*, the publication of the American Association for School Librarians, and the article emphasizes the ease and accessibility of digital storytelling activities for school librarians and the potential for digital storytelling to foster authentic, personal, powerful storytelling opportunities for students.[36]

1.5.3 Examples of Digital Storytelling

Identification of genres of digital storytelling is an area of need in terms of research. Some ad hoc categories and examples of digital storytelling applications include the following:

- In-person, live telling, recorded in a digital format (recorded on video and posted to Youtube or Vimeo)
- Digital book trailers (Animoto)
- Personal narratives (iMovie, Photostory)
- Storytelling via digital library resources (International Children's Digital Library)
- Informational/content-oriented storytelling (Movie Maker)
- Text or audio-recorded narration of images, drawings, or photos (Voicethread, Storybird)

The Center for Digital Storytelling, led by Joe Lambert, emphasizes the personal narrative quality of digital storytelling in this definition: "a short, first-person video-narrative created by combining recorded voice, still and moving images, and music or other sounds." Projects facilitated by Center for Digital Storytelling follow a format that builds personal narratives, mostly with adults, although a Youth section of example stories is presented on the Center's website. [37]

Bernajean Porter's Digitales program also highlights the personal narrative, although her teaching services are directed more toward K-12 teachers and the educational setting, with tools and resources for sharing digital storytelling with children after participating in her workshops and trainings. Porter's website explains that "each digital story uses a personal or family experience to develop a living memory with a moral, an a-ha awareness, or a specific lesson learned" and her method of digital storytelling features still photos, narration, and music.[38]

Two examples illustrate the breadth of activities known as digital storytelling according to the author, creator, or organization. First, "Celebrate Oklahoma Voices," in which stories are primarily comprised of still photos with narration, is "a statewide digital storytelling project empowering learners to become digital witnesses, archiving local oral history and sharing that history safely on the global stage of the Internet." Themes to note in this project are empowerment, community, and oral history, and adults, teens, and children are participants.[39] In a district-wide digital storytelling initiative of Kamehameha Middle School in Hawaii, curriculum-related digital stories feature students in videos on plants, animals, and the environment.[40]

Following a different interpretation of digital storytelling, Storybird is a social, creative, slide show-type format for making "short, visual stories that you make with family and friends to

share."[41] The site was featured in the American Association of School Librarians' 2010 Top 25 Best Websites for Teaching and Learning under the category of Digital Storytelling, along with two other sites.[42] Jing, http://www.techsmith.com/jing/, allows users to capture and share screen captures of what they are doing on their computer monitors. The International Children's Digital Library, http://en.childrenslibrary.org/, is a non-profit foundation and collaboration with the University of Maryland that provides free online access to digital children's books. As the diverse examples of "digital storytelling" demonstrate, this is a practice with numerous interpretations and applications. Some additional examples of digital storytelling applications in K-12 settings are presented in Table 3.

Table 3. Characteristics and examples of digital storytelling.

Digital Storytelling Characteristic(s)	Subject Area(s) and Grade Level(s)	Collaboration with Librarian Described?	Reference
Multimedia: images, photos, video; script; storyboard; Photo Story software	Art education K-12; undergraduate	No	Chung[43]
Story elements; photographs, clip art, other graphics; multimedia, narration; storyboard; citing sources; teacher-facilitated	Writing Elementary	No	Sylvester and Greenidge[44]
3-5 minutes videos; pre-writing exercise; artifact searching, storyboarding; personal narratives; revisions; digital construction; screening of stories; teacher-facilitated	English Secondary	No	Kadjer[45]
Photo Story software, teacher-facilitated; student-selected subject matter; multimedia content	Cross-curricular: weather, modern history, science, Greek mythology Secondary	No	Sadik[46]
Storyboarding, student-selected topics, teacher and expert-facilitated, video and student drawings	Myths and legends, character education Elementary	No	Ohler[47]

As mentioned, for this study, "digital storytelling" is a short, multimedia presentation of a story, created by a student in a guided (not independent) setting. Digital storytelling is considered a multimodal text, which here means that more than one format of text is presented, e.g., words, video, images, music, and voice-over, and that shifting among multiple modes of

interaction with the text is required to engage with it, including reading, listening, and viewing and/or watching. "Media" is the content, i.e., a digital media, and "mode" is the means of accessing it, i.e., reading, viewing, and listening.

1.5.4 Digital Storytelling and Traditional Storytelling

The format and modes of telling and listening to traditional and digital storytelling differ, yet some critical aspects of storytelling remain consistent between the two forms. The strongest similarity rests in the presentation of a story or narrative. The most apparent distinction is that, in most cases, traditional storytelling is presented via live teller or tellers in the same physical space as a live audience, and digital storytelling is presented via digital multimedia, and the teller, or author-creator, may or may not be present for the performance. Table 4 below lists other characteristics of traditional storytelling as compared to characteristics of digital storytelling.

Table 4. Comparison of traditional storytelling and digital storytelling.

Traditional Storytelling	Digital Storytelling
Storyteller and listener or audience	Storyteller/creator and listener-viewer
Length varies from approximately 4-5 minutes to 45 minutes-one hour	Length is usually 3-5 minutes, possibly longer
Includes story or narrative	Includes story or narrative
Presented by live teller	Presented electronically, on a screen
Performance occurs in group setting	Performance can be in a group setting or individual setting
Story is told through words, vocal inflections, gestures, body language, movements, musical instruments, and/or props	Story is told through images, photographs, sound, music, videos in a multimedia, electronic presentation
Audience can interact, participate, give feedback to teller; teller can adjust and change according to feedback received	Story is presented in a fixed finished medium, teller and audience cannot change the course of the story during the story. Potential for exchanges between teller and audience during live screenings.
No technology skills or equipment required to produce or view	Technology skills and equipment required to produce and view
Teller provides verbal descriptions and listeners create images in mind's eye	Creator presents images directly on screen

1.5.5 Use of Storytelling- and School-Related Terms and Conventions in This Study

It is helpful to the reader to know how some terms and phrases are used in this dissertation. The definitions and applications of "digital storytelling" and "traditional storytelling" (also referred to as "live storytelling," "face-to-face storytelling," or just "storytelling") are explored in depth in Chapter 2. "Digital stories" and "digital storytelling projects" are used here interchangeably to describe the product of the students' work, e.g., their Photo Story presentations and iMovies. These applications are described further in Chapter 3. In some contexts, the terms "story" and "video" refer to the digital storytelling projects, and the students and teachers at School 3 prefer the word "podcast" for their work in digital storytelling.

"Teller" is the person telling a story in a live, traditional format. To incorporate the technology and design skills required to create digital stories, in this study, the term for teller in a digital story is the "author-creator." Indeed, the many tasks of the author-creator are difficult to articulate with one phrase; perhaps one of the students in the study had the right idea by referring to one group of author-creators as "the makers," explaining that he liked a particular story because "the makers put in a lot of funny things."

In live, face-to-face storytelling, the person or persons hearing the story are the audience or the listeners. In this study, the audience of digital storytelling is described as the "listener-viewer." I used "performance" in this study to describe the sharing of the completed digital storytelling projects in the classroom and school library. "Performance" captures the spirit of a live storytelling performance, whereas other possible references, such as "viewing" or "watching," seem flat and not an accurate depiction of the experience.

Individuals in the school environment are the students, teachers and school librarians, principals, administrators, and paraprofessionals. In the collaborative activities described in this study, "classroom teacher" is used to describe the subject area teacher, such as the sixth grade social studies teacher in School 1 and the seventh grade language arts teacher in School 3. School librarians are also "teachers" by profession and via their status as teaching faculty per their school or district's teacher contract, though here, they are primarily referred to as "school librarians" to help clarify roles and responsibilities in the projects.

The school principal is the leader directly in charge of the activities, students, and personnel of a school building. The term "administration" includes school principals, but "administrators" can also include district level personnel, such as the superintendent, director of curriculum, or a technology administrator or director. A paraprofessional is a school staff member who provides classroom support to a class or individuals within a class. This job is sometimes known as a classroom aide or teacher's aide.

When I started analyzing the data, I kept the school settings straight in my mind by referring to them as "School 1," "School 2," and "School 3," which reflected the chronological order of when the projects began at each school. For consistency, I maintained the use of these names in the writing, with appropriate context and descriptors to help the readers understand which setting is being described. The names of the teachers and students in the study are pseudonyms, in order to maintain confidentiality. I am "the researcher" in the instances in which a transcript excerpt makes such a reference. Finally, in quoting students' responses as students wrote them, I used brackets [such as this example] to note a corrected spelling, which helps maintain readability of this document but acknowledges the original content of the student

response. There are some instances where I did not correct for spelling to illustrate a point, and these are specified within the text.

2.0 CHAPTER TWO: LITERATURE REVIEW

Education practitioners, including teachers, librarians, principals, and technology administrators, contribute much of the writing on digital storytelling; although some empirical studies do provide evidence of digital storytelling in practice, including several dissertations in the past six years (2004-2010) dealing with digital storytelling in education, including the K-12 setting, after school programs, and adult education. This literature review incorporates essays on traditional storytelling, research studies, literature of practice, and theoretical foundations.

2.1 NEED FOR RESEARCH ON LISTENER-VIEWER RESPONSES IN DIGITAL STORYTELLING EVENTS IN SCHOOL LIBRARY AND CLASSROOM SETTINGS

2.1.1 Traditional Storytelling as Event

A significant illustration of the social, interactive quality of traditional storytelling is Robert Georges' 1969 essay, "Toward an Understanding of Storytelling Events." Georges, Professor Emeritus in Humanities at UCLA, wrote that there are four, interrelated postulates that come together to create a holistic, "complex communicative event identified as a 'storytelling event.'"[48] Georges posits that (1) every storytelling event is a communicative event, with at least one decoder and at least one encoder sharing direct, person-to-person communication. Next, (2),

every storytelling event is a social experience, with the social identities of storyteller and story listener becoming, for the course of the event, the most prominent of the social identities maintained by the people involved. Further, (3), every storytelling event is unique, occurring only once in time and space in a setting of particular social relationships and forces. Finally, (4), storytelling events exhibit degrees and kinds of similarities, by which members of a society can use cultural values to group certain storytelling events.[49]

Georges uses these postulates to reject research notions that listeners are passive actors in storytelling events; that stories should remain static as they are reproduced from teller to teller and event to event; and that variations in stories represent accidental diversions. Georges asserts that the relationships and settings of each storytelling event meld into a moment that cannot be replicated:

> "the total message of any given storytelling event is generated and shaped by and exists because of a specific storyteller and specific story listeners whose interactions constitute a network of social interrelationships that is unique to a particular storytelling event."[50]

Author and storyteller Jack Maguire presents another set of storytelling characteristics in an essay about the educational process that is storytelling. Before explicating the benefits of storytelling, he asserts his disdain for the term "storytelling," lamenting its inadequacy in describing the range of activities it entails, including, "listening, imagining, caring, judging, reading, adapting, creating, observing, remembering, and planning."[51] In the first of his set of storytelling benefits, Maguire emphasizes that storytelling fosters direct, positive effects between human beings, and traces early forms of storytelling to ancient teachers, who not only made content relevant for their students through stories, but made the teaching process more enjoyable for themselves. Maguire also suggests that storytelling permits knowledge to take on a human

form, distinct from the written word, which motivates listeners to think more actively and critically than when reading.

The next major benefit of storytelling that Maguire describes is that storytelling allows for the listener's imagination to enter into the story via "the mind's eye." Choices about the appearance of characters, details of settings, and choreography of interactions are in the hands, or more accurately, the minds, of the listeners. Maguire worries that a media-saturated world threatens people's ability to construct personal images, which is a facility he believes supports encounters with subject-area materials in the school setting. Finally, Maguire maintains that storytelling is by nature loose, rough-hewn, and accessible. It is not perfect, which allows listeners to fill in gaps and moments of a teller's pause or stumble.[52]

As a matter of context, Georges' writing was published in the *Journal of American Folklore* (a peer-reviewed journal published by the American Folklore Society, University of Illinois Press) and Maguire's article comes from the *Children's Literature Association Quarterly* (a peer-reviewed academic journal sponsored by the Children's Literature Association and published by The Johns Hopkins University Press).

2.1.2 Digital Storytelling as Storytelling Event

Upon review of Georges' and Maguire's storytelling characteristics, and considering other descriptions of the art and tradition of storytelling, it seems possible that digital storytelling may not "hold up" in a test for essential characteristics of storytelling, particularly from the side of the listener or viewer. It becomes clear when comparing examples of digital storytelling to these qualities of traditional storytelling, that there are distinct differences in the potential for interaction described by both Georges and Maguire, as well as in the "on-the-fly" changes and

space for imagination that characterize Maguire's vision of storytelling. In digital storytelling, the performance, or end product, of the story is usually presented in a fixed, finished medium. As such, it seems that the audience involvement and response in digital storytelling would differ from the interactive, dialogic nature of oral storytelling as it is experienced live and as it is described in classic storytelling literature. With so much focus on the user, it seems that the role of the listener, so critical in traditional storytelling, is somewhat overlooked in digital storytelling events.

Many school and library-based digital storytelling activities include a group viewing of digital stories with the storyteller(s) in the room. In a study of middle-schoolers in an after-school digital storytelling program, Roche-Smith explains that seeing peers receive clapping and attention for screening digital storytelling projects in a group setting motivated one student who had previously exhibited only minimal efforts in his own digital storytelling project, to share his writing, create detailed stories, and increase his concentration.[53] In Hug's study of adolescent girls in an after-school club, the group viewing was open to friends and family, and this "public" aspect of the viewing motivated some girls to present less personal stories; other girls elected not to have their stories included in the viewing.[54]

In these group viewing settings, the storyteller does not typically have the opportunity to adjust the telling to fit the audience response, as would be possible in traditional storytelling. As part of this same relationship, the listener-viewers of digital storytelling aren't afforded the opportunity to participate or react, at least in a dialogic manner. Indeed, Maguire borrows sociologist Marshall McLuhan's term "cool medium" to compare reading and storytelling, though, as described below, reading theorist Louise Rosenblatt would likely argue against the idea that the reading is as "inflexible, one-way" as Maguire contends. Nonetheless, the person-

to-person dimension of live storytelling is not embodied in reading, nor, arguably, in digital versions of storytelling.

A fitting concept to apply to the live, imperfect nature of traditional storytelling is "fidelity." Returning to Kress and Van Leeuwen's scenario of the voiceover specialist working as part of a professional team that allocates the strata, or communication elements, of discourse, design, and production, there is a fourth strata that they identify – distribution. It is the task of the sound engineers to create a recorded piece with "high fidelity," a faithful iteration of the professionally engineered sound for public distribution.[55] Applying this concept to storytelling, it could be argued that a strength of traditional, live storytelling is in fact its "low fidelity," that storytelling events cannot be replicated precisely, and that the flexible, dynamic nature of the storytelling allows the teller to adapt a story for maximum engagement from a particular audience and context.

2.2 FOCUS ON AUTHOR-CREATOR IN DIGITAL STORYTELLING PRACTICE AND RESEARCH

2.2.1 Focus on Author-Creator in Digital Storytelling Practice

A common emphasis in digital storytelling programs – perhaps with the exception of theater-based showcases of digital storytelling as described by Lambert in his book about the Center for Digital Storytelling[56] –is on the role of the creator. In a similar fashion, many school library/classroom activities assign the learning objective to the creator of the digital story, and many other digital stories, such as StoryCorps, also focus upon the role of the author/teller, with

little attention to who the listener is, what the expectations for the listener are, and what the intended or observed responses of the listener might be. In this respect, digital storytelling is an example of a Web 2.0 tool; it is user-created, user-driven content, and outside a structured setting (such as a class assignment), there is little requirement for form, length, or quality. That open-endedness creates some of the very appeal and accessibility of digital storytelling to young people. Yet, as mentioned, most storytelling texts contend that a listener is a requisite element of a storytelling experience and that storytelling is a social process.

It is fair to note that digital media presents new options for collaborative work and shared authorship, which may introduce altogether new forms of audience involvement in storytelling. As in traditional storytelling, the roles and experiences of digital storytelling audiences vary according to the setting or context, and depend on the style and objective of the teller or program. Digital storytelling programs are offered across settings and age groups that exhibit distinctive characteristics of audience response.

2.2.2 Research about Digital Storytelling

From a classroom teaching perspective, digital storytelling can be an accessible and productive use of educational technology because it utilizes technology that is increasingly affordable and fairly simple to learn, and combines the technology with storytelling and story writing skills that teachers teach as part of the regular curriculum.[57] The added component of multimedia in digital storytelling, according to Lambert, is similar to that of a prop in a traditional storytelling performance: the prop enhances the telling, but the story is the most important part.[58]

Studies on the use of digital storytelling in the K-12 setting can be classifiable into several categories. Across the following categories, research studies and doctoral dissertations share a focus on the authorship and creative process of the development of the story:

- A tool to teach a curricular area, with stories created by the students or by the teacher
- A way to teach story elements, such as plot, characters, and setting or writing, including revision techniques
- An activity around which a community and identity develop, such as a technology club for girls[59]
- Virtual environments for telling stories, such as Second Life[60]
- Personal narratives in the spirit of the Center for Digital Storytelling[61]

Research on digital storytelling with adults also identifies qualities of empowerment and transformation, including interviews presented by Lambert with individuals who work with digital storytelling and global cultural activism and victims of domestic violence[62]; digital storytelling as a participatory media practice for Chinese immigrants in California[63]; and digital storytelling as way to foster self-understanding and dialog across groups of migrants in Dublin, Ireland.[64] Digital storytelling's capacity to support agency and civic action in young people is discussed by Erstad and Silseth, in that the process allows young people to "learn how to use technology to make their own voice heard and the opportunity to use knowledge and experience acquired outside of school in the process of becoming citizens."[65]

Carey studied a second grade class in a year-long ethnographic research study, and she reported that, "multimodal instruction, based on a social semiotic approach to literacy learning,

offered many modes of meaning making that fostered student engagement."[66] Ochsner found that making didactic digital movies helped middle school students to learn science content.[67]

Roche-Smith studied middle-school students in a technology-intensive after-school program, and found that digital storytelling became a means for the students to construct and express new understandings of themselves and to communicate with each other.[68] Hathorn studied the same program through a different lens: benefits for the African-American male. She studied elementary and middle school students in the after-school program, and concluded that the digital storytelling program helped students to gain language learning, technology skills, and technical skills vocabulary, in addition to self-confidence in technology use.[69] Hug studied an after-school technology program for adolescent girls and found that the girls used the technology to create personal stories and stories told from a distance, and that although the girls became capable users of the digital storytelling technology, they did not identify themselves as expert users; rather, the technology was "invisible" and the story was the main focus.[70]

Stojke conducted a study of four middle school students at a summer writing clinic, and she found that digital storytelling helped the students to make substantial revisions in their writing, including "adding, deleting, and rearranging text."[71] Li studied a digital storytelling program with adults, in association with the Chinese American Culture Association in the San Gabriel Valley in Southern California, and found that the project was empowering for the participants both in the process of creating the stories and in the "pride and collective efficacy" in the finished product, which was made available to the local community through screenings, donations of the stories, and posting on the Internet.[72]

2.2.3 Theoretical Models of Digital Storytelling

Theoretical frameworks for digital storytelling are limited. Schäfer developed a reference model for digital storytelling as part of her doctoral thesis at Technische Universität Berlin. The model, which she calls "Dimension Star," is intended for categorization and comparison of digital storytelling applications. How a story is developed in terms of origin, construction, stage, interaction, and appeal designates its placement into five categories: Media Repositories, Story Structures, Conversational Storytelling, Emergent Stories, and Dynamic Story Generation.[73]

Instructional Technology Professor Bernard Robin writes about the need for a theoretical framework to use in investigating the value of digital storytelling and other multimedia activities in K-12 classrooms. Robin includes digital storytelling as one of several components of instructional technology in the Technological Pedagogical Content Knowledge theory (which he credits Pierson, Mishra, Koehler and others with developing), a theory which integrates technology, content knowledge, and pedagogy and seems most pertinent to teacher education.[74] At this time, there appears to be no theoretical framework of digital storytelling in a library and information science context.

2.3 THEORETICAL FOUNDATIONS: RESPONSE TO TEXTS

This section considers theoretical works on responses to stories and multimodal texts, in order to provide a basis for comparison to digital storytelling experiences. For this study, digital storytelling is considered to be a multimodal text. As described previously, a multimodal text is the presentation of more than one format of text, e.g., words, video, images, music, and voice-

over, with a shifting among multiple modes of interaction with the text needed to engage with it, e.g., reading, listening, and viewing and/or watching. The term "modal" in place of "media" (as in "multimedia") encompasses the actions and skills required of the reader/listener/viewer, rather than just describing the formats. Erstad and Silseth explain that a multimodal text is complex in the way it is constructed and in how it is "read." In creating a multimodal text, different kinds of resources are combined, such as the sounds, images, and text in a digital story. To read, view, and engage with the multimodal text as a product, a semiotic, or sign-reading, analysis involved, according to Erstad and Silseth.[75]

2.3.1 Responding to and Interpreting Texts

Louise Rosenblatt is a reading theorist who is known for writing and research about "reader response," or "transactional response to reading," and her research forms one theoretical basis for this investigation of storytelling response. Although the format of storytelling is not a "reading experience," much of Rosenblatt's work involves the interpretation of texts, which arguably, storytelling events are.[76] Rosenblatt believed that reading is a transaction between reader and text, and that it is a dynamic, not passive, relationship. She explains that "the reader brings to the text a 'reservoir' of past experiences with language and the world," and she uses the term "reservoir" frequently in her writing to describe how readers approach a text.[77]

Margaret Mackey and other writers have used the term "palimpsest" to describe a similar quality of readers. An ancient palimpsest was like a version of an Etch-a-Sketch toy, a scroll that could be written on, scraped off, and written on again over the remnants of past writings.[78] Readers bring unique palimpsests to texts, with the potential to produce diverse understandings of what is read according to personal life experiences.[79] In other words, each reader's

experiences with reading and with life create unique layers upon which new understandings are developed. As such, multiple readers can read the "same" text and understand it differently according to their "palimpsests."

Rosenblatt's work is relevant to the interpretation of the students' engagement in digital stories. Rosenblatt compares the "cocktail party phenomenon" to reading, in that in a crowded room, an individual can effectively attend to only one conversation at a time, while the rest of the room takes on a hum of background noise. Though not in a manner that can necessarily be controlled, an individual enacts a similar skill when he reads, focusing attention, organizing meaning, and working back and forth among different areas of consciousness.[80] How readers attend to a text determines where they appear on Rosenblatt's model for reading–the continuum of efferent and aesthetic reading. Attention also has to do with what happens after the reading. Efferent reading, from the Latin *"efferre,"* to carry away, is related to what readers take away from the experience. A stance of efferent reading is reading for facts and information, "concepts to be retained, ideas to be tested, actions to be performed after the reading."[81] Aesthetic reading is about the poetic experience of reading, the here and now, the lived moment. The same reader may approach different texts, or even the same texts, from different points on the continuum, at different times.[82]

Donald Braid, Professor of English, Folklore, and Anthropology at Butler University uses the terms "referential" and "experiential" to describe how listeners extract meaning and coherence when hearing personal narratives. Listeners use real-life experiences, the experiential, to recontextualize that which they hear in terms of what they know. This process, which Braid describes as an active, repeating framing of new information and projections of what is about to

happen, helps the listener follow what is happening in the narrative. He explains that the dynamic processing of states of mind is what engages a listener.[83]

In reading, Rosenblatt describes this process as "a complex, nonlinear, recursive, self-correcting transaction," though her description doesn't necessarily fit neatly in the experiential and referential categories that Braid identifies. Braid's referential meaning, in contrast, is that which is outside the lived experience. It is also pertinent to note here that Braid refers to reader response theory, that of literary critic Stanley Fish in particular, to help analyze listener-response, much in the way that I am attempting to do with the current study.[84]

Joe Lambert explains that context determines what the listener "hears," and that which is "heard" is an outcome of two simultaneous processes: the environmental/external stimuli, and the private, internal hearing in the mind.[85] Rosenblatt writes about a related concept, with regard to the public and private aspects of reading. The public aspect is the scientific denotation of the text; the private aspect is the ongoing, interpretive, personalized version of a text that a reader dynamically shapes in the process of reading.[86] This simultaneous process of being in front of the same "text" as other readers or viewers, while living a different experience, is quite complicated to capture in a research setting, but the research design, as described below, is intended to explore both components of this process, as much as is feasible within this investigation.

2.3.2 Kinesthetic Responses to Texts

Margaret Mackey writes about the physicality of the multimedia reading/viewing/listening experience, which also connects to the experience of digital storytelling. This idea of a response as a kinesthetic state of being is an interesting theoretical approach for the current study. In

Mackey's book *Literacies across Media: Playing the Text* (Routledge, 2nd Edition, 2007), an additional perspective comes from Collins, who argues that reader response is a hybrid space; readers create images at the direction of the writer, and these images are not so much dictated as facilitated and inspired. Mackey's theory may be applied to the digital storytelling experience as well.[87] She also writes about attention in the context of her study of students' reading of multimedia texts. She emphasizes that human attention is finite, and that individuals concentrate on only one thing at a time, though they can switch very quickly among tasks. As Mackey explains, "attaining, sustaining, and directing attention is a major thrust of any text, whether designed for aesthetic, informational, or commercial purposes."[88] The attention of the student listener-viewers is important in this study, as the multimodal format of digital storytelling places particular demands on the attention of the listener-viewers. Different kinds of attention are required for reading and for listening, and within those activities, the purposes for reading and listening also influence how individuals pay attention.

2.3.3 Trance and Transportation

Brian Sturm, professor and storyteller at University of North Carolina-Chapel Hill, researches and writes about the "storylistening trance," a state of mind into which listeners enter during a storytelling experience.[89] Extending this theory into digital storytelling experiences makes sense, as the components of storytelling form the basis for digital storytelling projects, though to varying extents. Sturm's theory is shaped in part on Rosenblatt's theory, particularly her differentiation between the "text," which is created by the author, and "the poem," which is formed by the reader's experience with the text. Sturm also bases his research on studies of consciousness, including structuralist, functionalist, behaviorist, and constructivist perspectives,

with constructivist as the primary reference point for his work. Sturm identified six categories to represent the listener's experience with the storylistening trance: realism, lack of awareness of surroundings or other mental processes, engaged receptive channels, control, placeness, and time distortion. These categories emerged from Sturm's participant-observation during storytelling festivals and interviews with listeners ranging from young people to the elderly.[90]

Of note here are the implications that Sturm identifies for teachers and school librarians, namely, enlightening what is happening in the mind of "the involved student," the term Sturm uses to describe "a child in a classroom who is lost in thought over a particular math problem or a student in the library media center deeply engrossed in a story, a computer game, or a difficult information search." He also relates contributing factors of the storylistening trance to methods for engaging students in learning. For example, a teacher can use situated, authentic learning and novelty, provide physical and emotional comfort, and develop rapport to engage students in learning.[91]

Sturm has identified influences on the trance state, that which allow or inhibit the trance. The storyteller, story, environment, and listener affect the trance according to these qualities; note that the categories are my own and not Sturm's:

- Storyteller: style, involvement, rapport, ability
- Story: content, rhythm
- Environment: distractions and recency of the storytelling
- Listener: novelty/familiarity, activation of memories, training or social role, expectations, comfort, and preferences[92]

Green, Brock, and Kaufman, in the journal *Communication Theory*, identify "transportation into narrative worlds" as an outcome of enjoyable experiences with media, and there are aspects of their transportation theory that are similar to Sturm's storylistening trance. For example, they report listeners becoming emotionally involved in a story, having the feeling that they are really "there," and losing track of time.[93] An important connection between the work of Green, Brock, and Kaufman and the current research is transportation's effect on enjoyment, which can inspire listeners and viewers to seek out similar activities in the future.

2.3.4 Connecting Listener-Viewers through Digital Literacies

Lambert maintains that understanding the author's intent is not easy when viewing a story via the Internet, which could be the setting of some viewings of digital storytelling. He identifies that "communities of context" are needed to support understanding of the author's intent.[94] Although the digital storytelling format developed by Lambert and colleagues at the Center for Digital Storytelling (particularly Dana Atchley, who along with Lambert is credited in many sources with creating digital storytelling) typically includes a performance of the story in a group setting, with directed debriefing and feedback, it is not clear that all digital storytelling takes place with such attention to the context of the performance or the viewing of the story.

Even though Lambert's work is directed primarily toward adult learners, his discussion of the value of digital storytelling in effectively developing digital literacies is quite relevant to K-12 settings and supports the use of digital storytelling in the classroom. He explains that in his experience in over fifteen years of teaching digital storytelling, that the form of project-based learning within the context of personal narrative supports the learning of multimedia technologies. Further, even when the goal is to convey information (as a student might do in a

curriculum-related story), the personal voice of digital storytelling adds meaning, as the creator is describing her "version of events and realizations."[95] Lambert believes that digital storytelling connects the creator of the story to the content; the current study seeks to investigate where the listener-viewer fits in this relationship, and how the listener-viewer characterizes digital storytelling.

Storyteller Kendall Haven's book, *Story Proof: The Science behind the Startling Power of Story* (Libraries Unlimited, 2007), compiles research findings on the brain, learning, and story to argue that human minds are wired for story. Haven presents vast findings from science, educational psychology, neurology, psychology, medicine, and other fields to support his thesis that story is the most effective way to learn. He organizes the cognitive and neural research studies into the following eight themes: comprehension, logical thinking and general (cross-curricular) learning, creating meaning from narrative, motivation to learn (and to pay attention), building a sense of community and involvement, literacy and language mastery, writing, and memory. All of the studies address the effect of story on the "receiver" of the story, which Haven exemplifies with practical applications, such as, "placing key concepts and information within the structure of stories provides motivation to absorb and learn material by creating context and relevance more efficiently than other narrative forms."[96]

Thus, the wide, diverse use of digital storytelling in the K-12 classroom setting and in other contexts with young people, considered along with digital storytelling literature that emphasizes the creator/author, not the listener-viewer, sets up a relevant focus for this investigation. The lens of existing theoretical frameworks for reader and listener responses will support effectively this exploration of how listener-viewers respond to and engage in digital storytelling and how digital storytelling is characterized as a storytelling activity in the

intermediate classroom and middle school library. The remaining sections of this chapter provide background into the media lives of children and state educational standards on which some of the classroom activities in this study were based.

2.4 CHILDREN'S MEDIA USE AND DIGITAL LEARNING

2.4.1 Children's Media Use

In studying students' use of technology and information resources at school, it is helpful to consider young people's overall use of technology and information. The January 2010 Kaiser Family Foundation Report, *Generation M^2: Media in the Lives of 8- to 18-Year-Olds*, [97] examines the amount of time that children spent interacting with media, a phenomenon perhaps best described by the title of the related *New York Times* article, "If Your Kids Are Awake, They're Probably Online."[98] According to the Kaiser report, children ages 8 to 18 spend up to 7 hours and 38 minutes hours a day engaged in media activities, a figure that increases to 10 hours and 45 minutes and when adding in media that young people view, play, and interact with simultaneously.

The Kaiser report notes that every type of media usage has increased in the past 10 years for 8 to 18- year olds, except for reading. Examples of increases in media usage in the years 2004-2009 are as follows: 24 minutes of increased time per day for video games, 27 minutes more per day for computers, and 47 minutes more per day for music and audio. The Generation M^2 study also reported on ownership of "gadgets." In 2009, 76% of children ages 8 to 18 owned iPods or .mp3 players (up from 58% from 2004); 66% owned a cell phone (up from 39%

ownership in 2004); 59% owned a handheld video game player; and 29% owned a laptop computer. [99]

Researchers in diverse disciplines are studying learning in the context of digital media. Among these studies is the Digital Youth Project led by Mizuko Ito. This large-scale, three-year study of the media use of youth found that children and young adults rely heavily on digital media for social interaction, and for some, to pursue interests such as gaming, creative writing, and video editing in online communities. The researchers describe the types of youth media activities according to three categories: Hanging Out, Messing Around, and Geeking Out, which reflect successively deeper levels of involvement in consuming and constructing specialized knowledge.[100]

In *Language and Literacy Learning in the Digital Age* (Routledge, 2011) Gee and Hayes examine the learning that takes place within popular culture, and in particular, they identify a type of learning that is "deep, complex, and knowledge-producing," which they term "passionate affinity-based learning."[101] This type of learning shares some qualities of "Geeking Out" as described by Ito et al,[102] and it occurs in "passionate affinity spaces" that may exist in a brick-and-mortar location, in a virtual space, or both. Gee and Hayes name seven qualities of passionate affinity-based learning. First, shared interests and not credentials bring the learners together, and the learners have a deep passion for the subject. All participants can be producers of knowledge and not just consumers, and leadership roles are flexible and changing. Different members of the spaces have varied areas of specialization and follow different trajectories of learning, and though some members become experts, learning is perpetual and ongoing in the space.[103]

2.4.2 School Curriculum and Standards Related to Digital Storytelling

Academic standards documents and school and state-level curricula address the prominence of technology in 21st century learning. The most recent standards document developed by the American Association of School Librarians (AASL) is the 2007 *Standards for the 21st Century Learner*, in which AASL expands information literacy beyond "the ability to find and use information," which was the definition presented in the 1988 and 1998 versions of *Information Power*, which were previously guiding documents for school librarians.[104] In the 2007 Standards and accompanying implementation documents *Standards for the 21st-Century Learner in Action* (ALA, 2009) and *Empowering Learners: Guidelines for School Library Programs* (ALA, 2009), multiple literacies and affective elements, termed "dispositions," form a richer, more dynamic picture of learning outcomes, an update that corresponds more closely with research in information seeking behavior.[105] The new standards also reflect a more global perspective, based upon the idea that knowledge is socially constructed, and that collaboration, real world connections, and diverse perspectives are integral parts of learning.

The state-level education body in Pennsylvania is the Pennsylvania Department of Education (PDE). In twelve subject areas, PDE mandates academic standards, or "benchmark measures that define what students should know and be able to do at specified grade levels beginning in grade 3, and these standards serve "as the basis for curriculum and instruction in Pennsylvania's public schools."[106] One of the twelve subject areas is Science and Technology, for which state standards were adopted in 2002.

In 2010, Pennsylvania replaced two of its sets of subject area standards, "Mathematics" and "Reading, Writing, Listening and Speaking," with the Common Core State Standards – Math and Common Core State Standards – English Language Arts.[107] According to the Common Core

State Standards Initiative website, the Common Core is a "state-led effort to establish a shared set of clear educational standards for English language arts and mathematics that states can voluntarily adopt."[108] In the Key Design Considerations of the English Language Arts Standards, it is explained that "the need to conduct research and to produce and consume media is embedded into every aspect of today's curriculum" and as such, information and technology skills are not treated separately, but incorporated throughout the standards.[109]

3.0 CHAPTER THREE: METHODOLOGY

3.1 INTRODUCTION

The research questions for this mixed-methods study are as follows:

(1) How do student listener-viewers respond to and engage in digital storytelling in school library/classroom activities in the intermediate classroom and middle school library?

(2) How do the student listener-viewer responses characterize digital storytelling as a storytelling activity in the school library/classroom?

This chapter explains how the methodology was designed and implemented to investigate these questions.

3.2 RESEARCH OVERVIEW

This study incorporates several methods of qualitative research. The foundation of the project is an ethnographically-oriented, participant-observer approach applied in three intermediate and

middle school classroom settings, with student surveys, focus groups, teacher and librarian interviews, and learning artifacts as the other components.

Research studies in library and information science support the use of mixed methods. For example, Agosto and Hughes-Hassell's study of everyday life information seeking behaviors of urban teens employed methods of written surveys, audio journals, written activity logs, digital photographs taken by participants, and semi-structured group interviews. Agosto and Hughes-Hassell assert that the mixed methods approach allowed the young people in their study to communicate in ways that met their personal preferences.[110]

The "tween day" information behavior studies by Meyers, Fisher, and Marcoux also utilized mixed methods, including a focus group, interviews, and a WebQuest, to study tweens. These authors emphasize that doing research "with" youth, rather than "on" youth, provides an experience that is engaging and empowering for the participants and offers meaningful interactions with adults and peers.[111]

In this study, the length of time for the classroom-based activities depended upon the lesson plans and classroom/school schedules, so I visited each classroom as a participant-observer for durations unique to each classroom setting. The number of days spent observing ranged from six (School 3, grade 7) to thirteen (School 1, grade 6). This relatively short-term, event-based method of ethnography has been called "focused ethnography," a method characterized by short-ranged field visits, intensive, multimedia data collection (such as audio, photos, and video), and a focused attention on a particular aspect of the participants' activities.[112] In this case, that focus is on the listener-viewer response.

Following the development of the digital storytelling and the viewing of the students' stories at each school site, I conducted a survey with all of the students in the participating

classes and shared focus-group discussions with a group of 6-8 randomly selected students from each class. I also interviewed the teachers and librarians and collected learning materials from the activities. Table 5 shows the sequence of research activities at each school site.

Table 5. Sequence of research activities with students and teachers/librarians at each school site.

1. Permission process, identification of classes for participation
2. Observation of students during the development of digital storytelling projects. Instruction led or facilitated by classroom teacher and school librarian.
3. Observation of students during "performance day" viewing of digital stories.
4. Written survey of all participating students as soon after viewing as possible, depending on school and class schedule
5. Focus-group of 6-8 students
6. Face-to-face interviews with classroom teacher and school librarian
7. Collect learning materials from teachers and students

Additional data for the study included photographs and video of the classroom space and the students during digital storytelling performance, the students' digital stories (in the form of media files), and the teachers' classroom materials (handouts and rubrics). These artifacts are described further below. Table 6 provides the scenario for each setting, including the subject area in which the digital storytelling was implemented, the type of activity, the number of student and educator participants, and the number of days spent observing the project development and viewing digital storytelling.

Table 6. Scenarios, participants, and number of days spent observing at each of the three school sites. "Observation Days" column includes digital storytelling project development and performance days.

School	Grades Levels and Ages	Subject Area	Activity	Students in Study	Educators in Study	Observation Days
1	Grade 6, ages 11-12	Social Studies	Ancient China Photo Story	15	1 teacher 1 school librarian 1 para-professional	13
2	Grades 4-5, ages 9-11	Technology/ Language Arts	Digital Book Trailers / iMovie	17	1 teacher	10
3	Grade 7, ages 12-13	Language Arts	Team Podcast/ iMovie	22	1 teacher 1 school librarian	6

3.2.1 Study Population

The study population is students from classes in three Pittsburgh, Pennsylvania-area schools in the intermediate and middle school grade levels. The three school sites were selected by convenience sample, a nonprobability sample in which the researcher selects from groups that are readily available for study.[113] The study focuses on the students' activities in series of digital storytelling lessons or activities for intermediate and middle-school students, taught or facilitated by teachers and school librarians working in collaboration. As described in more depth in the sections that follow, the three sites in the study included students in grade 6, who were ages 11 and 12 (School 1), a mixed-grade level classroom of grades four and five, with students ranging from age 9 to age 11 (School 2), and grade 7, in which the students were 12 and 13 (School 3).

In order to answer how students listen and respond to digital storytelling in the intermediate and middle school classroom and school library setting, I wanted to study the events of the classroom in as natural and authentic a setting as possible, rather than via experimental design. As the researcher, my role did not involve the development of the lessons, but rather the investigation of digital storytelling as it was currently being used in a school setting.

3.2.2 Professional Background of the Researcher

My PhD studies at the University of Pittsburgh spanned the years from 2008 to 2011. During each semester of my doctoral studies and dissertation research, I taught or co-taught face-to-face and online graduate courses in the School Library Certification Program at the University of Pittsburgh.

Prior to matriculating as a full-time student in the doctoral program, I worked for eight years in K-12 education. I taught first grade for four years in a suburban Pittsburgh school district, then I worked for four years in a different suburban district, also in the Greater Pittsburgh area, as the middle school librarian for students in grades six, seven, and eight. In addition to my work as a professional educator, I also have fifteen years of work and volunteer experience with students of diverse cultural backgrounds, ages preschool through high school, in urban, rural, and suburban settings. These activities included substitute teaching and K-12 classroom experiences, community and university-based children's dance and theater internships, high school marching band and elementary/junior high baton twirling corps instruction, day care employment, public library program presentations, and community outreach programs.

3.3 DATA COLLECTION AND RATIONALE

Three different school settings provided a rich body of data for analysis. In this application of an ethnographic approach, the opportunity to observe more than one implementation of digital storytelling provides a range of listener-viewer experiences to answer the research questions and allows for a manageable set of data.

With this type of study, largely exploratory in nature with an aim to characterize the listener-viewer response and how it is represented in this type of classroom or library activity, there are additional advantages to having three schools, including a range of independent and teacher-led projects, different ages and ability levels within the intermediate and middle school grade levels, varying levels of comfort and familiarity with technology, several software applications and computer operating systems, varied classroom structures and approaches to teaching and learning, diverse genres and purposes of digital storytelling, and distinct formats for the viewing of the completed digital storytelling projects. As Heath and Street describe, there is "immense variability as well as stability" across cultural contexts, and this was very true of the classrooms that I visited.[114]

3.3.1 Participant-Observation in the Classroom and Library

In an ethnographic approach, the researcher studies a group through immersion in the setting and by using several data collection methods.[115] Gay, Mills, and Airasian identify as data sources for ethnography observations, interviews, and review of documents, which represent several components of the approach in my study.[116] In this approach, the researcher is a participant-observer who has the opportunity to "hear, see, and begin to experience reality as the participants

do."[117] Characteristics of ethnographic research in the educational setting include the presentation of "an accurate reflection of participants' behaviors and perspectives;" "an emphasis on exploring the nature of particular social phenomena" rather than testing out hypotheses; and the collection of data through field work experiences.[118] Participant-observers have the opportunity to develop insights about the culture and relationships with the participants, which may enrich the research.[119]

Situating myself in the classroom learning environment for the duration of the digital storytelling project – not just the sharing of the finished products, even though that aspect was initially my focus – was necessary for accurate understanding of the research setting. Observing students throughout the whole activity helped to establish context, which Professor of Education Joseph Kincheloe described as a critically important attribute of qualitative research, particularly educational research, as "human experience is shaped in particular contexts and cannot be understood if removed from those contexts."[120] Erstad and Silseth employed a similar stance in their study of eighth-grade digital storytelling in a school in Norway, in which they emphasized the importance of "analyz[ing] the use of technologies within the context in which it [was] being applied."[121] Even Robert A. Georges 1960s research on storytelling corroborates the attempt to study as natural a setting as possible; he points out the value of "captur[ing] the wholeness" of "natural field situations."[122]

During the observation phase, descriptive and reflective information about the setting was recorded via field notes, which describe as accurately and comprehensively as possible the activities in the research setting.[123] The use of field notes as a data source support the self-reporting provided via the survey, focus group, and teacher and librarian interviews. The field notes reflect my observations of what teachers and students did and said during the digital

storytelling projects, including the teachers' instruction and interaction with students; students' collaborative and individual activities on the computers and in the library and classroom; discussion among students and my exchanges with students; student behaviors during the class sessions and when viewing the digital stories; and classroom and technology arrangements and equipment. Additional data supporting the field notes were photographs and video of the students and classroom spaces during the performances of the digital stories.

In addition to observations of behavior, the field notes also included information as to how the performances spaces were set up, as proximity of the sound, volume, and arrangement also affect listening and who responds and how.[124] Information regarding the class and school schedules and environments were also part of the field notes.

3.3.2 Surveys

The survey instrument was used in this study to collect some information on the students' background knowledge of storytelling and digital storytelling, their typical computer and gaming use, and their experiences with this digital storytelling project at school. It should be noted that surveys are not a typical instrument for an ethnographic study, and that although this study uses some ethnographic methods (like participant-observation), the survey is part of this study's mixed methods design.

The survey questions in this study were designed to gather sufficient data to support the exploration of the research questions, while at the same time being interesting enough for the students to want to answer, not too difficult to read or answer, and not excessively lengthy, because the surveys were distributed during a class period. The questions follow Converse and Presser's recommendations to create questions in straightforward language, to ask about a

narrow reference period, and to ask specific questions.[125] The privacy inherent in a written survey was intended to offer students the opportunity to answer questions about their peers' digital stories without making their responses known to the group. The study includes open-ended and closed-ended questions. Closed-ended questions generated specific responses with the same frame of reference for all of the students, with a uniformity of responses.[126] The survey is included in Appendix A, along with a separate version of the survey that maps the research questions to relevant theory.

The initial design of the study included a pre-test of the survey instrument, in the format of a "participating pretest," in which respondents understand that the exercise is a practice run, designed to gather feedback on the survey questions.[127] A pre-test also provides the researcher the opportunity to test the task difficulty, the flow of the questions, the order of the questions, and the respondents' interest and attention.[128] As described in Section 3.3, Data Collection, this component of the study was not conducted, an outcome of the process of finding schools for study participation.

The survey and also the focus group (described in the following section) were conducted as soon as possible following the viewing of the digital stories, in order to prevent students from forgetting their reactions to what they saw and heard. For School 1, the students participated in the viewing, survey, and focus group on four successive school days, with a weekend in between viewing days one and two. At School 2 (book trailers), the students viewed the videos and did the survey immediately following; the focus group was held the next school day, which was a Monday after the Friday performance day. For School 3 (Green Team podcast), the students watched the video and responded to the survey immediately after; the focus group was held the next day. Note that two separate focus groups were conducted for School 3, due to the class

schedule of two of the three students who made the (one) digital storytelling video for this study site. Additional information about how the study was conducted at this school site is presented in Section 3.4.4.

Asking the students directly about their experience as listener-viewers helped me to learn about those aspects of their viewing experience that I could not observe directly. Like reading, viewing digital media is an activity with public and private components. As Mackey explains, "much of engagement with texts is not only private but also silent and invisible."[129] Thus, it was helpful to ask students about their response via survey questions and focus group questions, which each opened up different aspects of the listener-viewer experience. Table 7 presents information about when the surveys and focus groups were conducted.

Table 7. Time frame of performance days, survey and focus group.

School & Project	Performance Days	Survey Day	Focus Group
School 1 Ancient China Photo Story	2 class periods, Friday & Monday Next school day after last work day	Part of 1 class period For 13 students: Day after Monday performance day For 2 students: Two days after Monday performance day	Part of 1 class period Three days after performance day
School 2 Digital Book Trailers	Part of 1 class period, Friday Afternoon of last work day	Part of 1 class period, Friday Immediately following performances.	Part of 1 class period, Monday Next school day after performance/survey day.
School 3 Team Podcast	Part of 1 class period 2 separate occasions 1st performance: Class of 20 students 2nd performance: Small group, 2 students	Part of 1 class period Immediately following class performance	Part of one class period For 8 students: day after performance For 2 students: same day as small group performance

3.3.3 Focus Groups

Jacob recommends that for children, a focus group take no longer than one-and-a-half hours[130]; the focus group sessions in this study ranged from 12 to 22 minutes, with a group of 6-8 randomly selected students at each school site. The open-ended format of the focus-group allowed for informal discussion, elaboration on topics, and spring-boarding of ideas from one

student to another. It is possible that the focus group format allows students at the intermediate and middle-school level to share more thoughts than they might "feel like" writing, particularly in an informal conversation scenario. In all three focus group discussions, there was a period of adjustment to this conversational setting, including clarification from me that the discussion was not part of a graded classroom assignment and that the students did not have to raise their hands to be "called on" to participate.

The social atmosphere may have encouraged new thinking by the students. I attempted to foster a comfortable setting, with chairs in a circle at two schools, and tables pushed together to sit around at one school. The natural, relaxed atmosphere is a strength of the focus-group technique, as is the socially-oriented setting.[131] According to Morgan, focus groups used in combination with participant-observation can be especially helpful in gaining access to the study population and may help the researcher to affirm developing conclusions.[132] Jacob notes that applications of focus groups include "building excitement about a topic from the spontaneous combination of participants' comments" and "providing an opportunity for facilitator and participants to develop meaning and learn more about a topic," both of which were beneficial to this study.[133]

3.3.4 Interviews with Teachers and Librarians

I conducted face-to-face interviews and one phone interview with the teachers and school librarians who planned and facilitated the learning activities, with the rationale that they may present insights that the students did not provide, as well serve as triangulation for the observations, survey responses, and focus group responses. A structured, open-ended format was used to interview the teachers and librarians. The open-ended response platform allows for

"detailed responses and elaboration on questions in ways [not] anticipated," and the interview format allows for the participants to share attitudes, feelings, concerns, and perspectives on the experience.[134]

I conducted the interviews at the conclusion of the projects in each of the three schools, and the interview questions are listed in Appendix A. I inquired about the planning of the activity and why the teachers elected to use digital storytelling, as well as asked for general reflections on the project, their perceptions of students' engagement as creators and listener-viewers, collaborative components of the lesson, and aspects to keep or change for next time.

3.3.5 Teaching and Learning Artifacts

Additional data sources for the study included the teachers' and librarians' classroom teaching materials, such as Ms. Black's evaluation rubric for the book trailers and Mrs. Pearl's topic list about subjects for the Ancient China unit. The nature and design of each project differed; as such, the materials representing each activity were different. The classroom teachers' materials included handouts, rubrics, topic lists, and self-evaluations. These documents served as supporting artifacts for the study, providing a starting point for discussion with the participants and a source for interpretation and reference during data analysis. These are included in Appendix B.

Another important piece research data for this study is the digital storytelling projects. The projects were not analyzed in terms of quality or content in the way that the classroom teacher and school librarian would assess them; instead, they were used as a reference to help illuminate and clarify the comments made by the students. For example, when a student from School 1 referred to a "star" transition in one of the videos, I could access this video to find and

review the star. Likewise, as students described other images, music, sound effects, and voice-overs, having the digital stories at hand supported more thorough analysis.

3.4 SCHOOL SITES AND STUDENT ACTIVITIES

3.4.1 Preparing to Conduct Research in K-12 Schools and Seeking Permission

The teachers and activities in the study were selected through professional contacts and the following three factors:

(1) The teachers and librarians were planning to teach or facilitate a digital storytelling activity with their students as part of the regular school curriculum in the Spring 2011 school year;
(2) The school district administration permitted me to conduct the study as part of these existing learning activities;
(3) The permission process (administrative level and parent consent) would work with the schedule of the planned digital storytelling lesson.

In the proposal for this research study, I indicated that I would seek two study sites and one pre-test site where I would test one data collection tool, the student survey. The timing and permissions process resulted in three actual study sites with no pre-test site.

I shared informal discussions with teachers and librarians at seven potential school sites beginning in December 2010. At two potential sites, the librarians were planning digital

storytelling lessons that would have been potential research opportunities, but both were scheduled too soon to obtain the required administrative approval process and parent consent. I did not pursue the formal permission process with these districts. I received official Institutional Review Board approval from the University of Pittsburgh in February 2011, at which point I initiated the formal permission process with five other schools and districts, hoping to attain permission to conduct the pre-test and research study at a total of three sites. I also obtained updated criminal history and child abuse clearances required for working with students in school districts in the state of Pennsylvania, per the Pennsylvania Department of Education guidelines.

At a district where I asked to conduct the pre-test, the middle school building principal declined outright, stating district policy that no dissertation studies were to be conducted in their schools. Through email and phone discussions with a different school district's administration (the superintendent and assistant superintendent), I learned that permission for a research study required discussion by a standing school board committee and, upon approval of the committee, a vote of approval by the school board. The meeting schedule of the committee would not have allowed for approval in time for the activities that the school librarian was planning for digital storytelling, so I decided not to go further with the process at that school.

Through contacts with the librarians, principals, and teachers in three other schools, I was able to identify teachers and librarians who were planning digital storytelling, in districts where the administration seemed receptive to a research study, and where the permission process could be conducted in a timeframe that suited the planned digital storytelling activities. After the school administration permissions were obtained and the teachers and librarians agreed to participate, the teachers and librarians selected the classes (i.e., the groups of students) that were invited to take part in the study.

School 1 was the first school setting where I obtained approval from the district to proceed with the parent consent process. The school librarian, classroom teacher, and I coordinated the distribution and collection of consent forms, and then started the project, while the permission processes were still in the final stages in the other schools.

In finding a classroom and teacher to work with at School 2, I found that I had to adjust the age range of the students that I initially expected to observe. I set out with middle school – typically grades 6-8 or 5-8 – as my target population, but when a librarian colleague at this K-8 school connected me with her school's technology teacher, it happened to be that the digital storytelling lesson she was planning was for a mixed, grades 4/5 classroom. This modification to the age range of students in the study was submitted and approved by IRB.

The School 2 teacher and school director requested a deletion of the mention of "a small school supplies gift" that students would receive for participation from the parent consent form and student assent form, in keeping with school philosophy about intrinsic motivation. They explained that I could give the children the gift, but that they did not want this information available going into the study, to prevent students from participating in order to get a reward. I submitted and received approval for this IRB modification request, and the updated versions of the forms were used with Schools 2 and 3. Both versions are included in Appendix D.

Another additional document requested by a school district was a research study summary (to accompany the letters of invitation and consent) for review during the school board approval vote; this summary is included in Appendix D. All invitations and consent forms are also in Appendix D, including the student assent form, which was strongly recommended by IRB even though all of the student participants were under the assent form-required age of 14.

In the process of learning how challenging it was to obtain permission to conduct research in a K-12 school, I went forward with permission processes for three digital storytelling projects, hoping that at least two would be approved in the schools. With three complex permissions processes in various stages of approval, at schools where teachers and librarians were willing to help me with the study, it turned out that I didn't end up with a pre-test site. Once I had two schools approved, I was reluctant to stop a permission process already in progress at the third school or ask to change my request and proposal by asking to do just the pre-test instead of observe digital storytelling project that the teacher was anticipating that I would observe.

3.4.2 School 1: Grade 6 Ancient China Photo Story

3.4.2.1 School 1: Participants and School Setting

School 1 was a sixth grade class of 15 students in a suburban, public middle school that houses just under 1500 students in grades five through eight, a grade level configuration in its first year for the district. The school was previously a 6-9 building. The school is classified as a Large middle school by the National Center for Education Statistics (NCES). The NCES figures describe the student population as 60.3% African-American, 37.6% White, and less than 1% Asian/Pacific Islander, Native American/Alaskan, and Hispanic. The class demographics reflected that of the school. Fifty-three percent of the student body is eligible for free or reduced lunch.[135]

The classroom teacher in this collaborative project is Mrs. Pearl (a pseudonym), who has been teaching for 33 years, 20 in her current sixth grade social studies position. The middle school librarian, Mrs. Auburn (a pseudonym), has been teaching for 13 years, 10.5 of which have

been in her current position. Mrs. Auburn has a combination fixed and flexible teaching schedule in the library, with fifth grade library classes in a fixed schedule (35 classes per week) and some class periods for collaborative teaching with classroom teachers and student visits to the library.

The class in this study was a group of fifteen students, nine male and six female. In self-reported information on the survey, 14 students reported that they or their families have a computer at home. One student skipped the question, though all fifteen students reported that they use computers at home, for amounts of time ranging from five to ten minutes to "at least five hours" and "twelve hours." Only two students reported the same amounts of time – less than 10 minutes a day and 30-60 minutes a day. The other students reported unique responses for this group, one, two, three, four-to-five, and five hours, and one student reported 12.

Four students wrote an open response with describing their usage with such remarks as "once when I get home and later after dinner." One student reported using the computer "when I get bored of playing the Xbox 360," thus separating computer time from game time, although 12 of 15 respondents reported that they play games on the computer. One student skipped the question about computer time.

Other high-frequency responses on the computer activities checklist were listening to music (15 of 15 or 100%), watching Youtube (14 of 15, or 93.3%), and "talking to my friends" (13 of 15 or 86.7%). Ten students in this group of children ages 11 and 12 indicated that they use Facebook, a social media application with condition "you will not use Facebook if you are under 13" as an item within their privacy policy. Only one student reported checking school assignments, and two students reported reading news and making artwork.

Thirteen of the fifteen reported owning a handheld video game player or a gaming system; eight students considered themselves “gamers” and seven did not; and ten of the fifteen said that they played a video game “yesterday,” a question that it turned out amused the students, and they brought up it up again in the focus group. One of the students informed me that on the focus group day, he had also played a video game “yesterday.”

The library space is arranged into two computer labs and a teaching area, each set apart by bookshelves. The teaching area and the lab where students worked on this project are shown in Figures 1, 2, and 3. The library also has a kiosk-style grouping of three computers, a couch/comfortable chair area, and several tables for small groups. There are 14,304 titles and 18,312 volumes in the library collection, as reported by the library secretary/secondary education technology coordinator. There are several offices and storage areas accessed through the library, some of which are part of the library and some that are used by other departments.

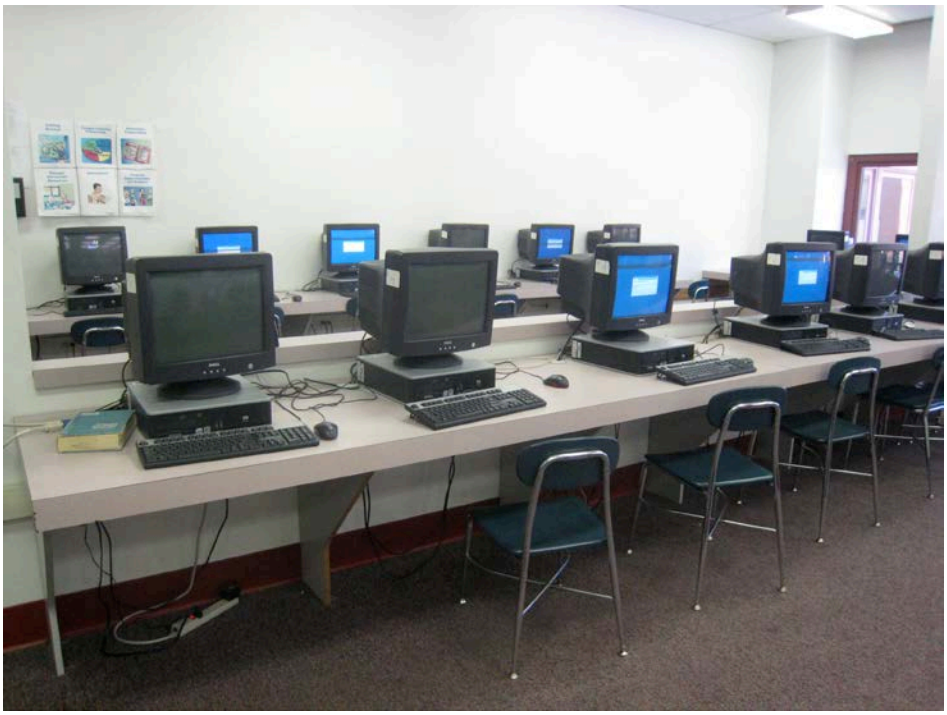


Figure 1. Computer lab in Mrs. Auburn's school library, School 1.

Figure 2. Alternate view of School 1 library computer lab, with school library shelving and student seating in the background. The bookshelves on the left (with the plants, above the computers) form one wall of the classroom teaching space.

Figure 3. School library teaching area, School 1.

3.4.2.2 School 1: Educator Collaboration in Planning and Teaching

This digital storytelling project was a very structured activity, planned by Mrs. Auburn and Mrs. Pearl to implement with the Ancient China unit in the social studies curriculum, using Photo Story software, with selected, readily available research tools and particular timing during the school year. This project was the second digital storytelling activity that Mrs. Auburn and Mrs. Pearl developed together. Two years prior, they facilitated a project with students in the gifted program, who created a Photo Story project that they had the opportunity to share at a state educational technology conference.

Photo Story is a free Microsoft product, described as follows on the product download website:

> Create slideshows using your digital photos. With a single click, you can touch-up, crop, or rotate pictures. Add stunning special effects, soundtracks, and your own voice narration to your photo stories. Then, personalize them with titles and captions. Small file sizes make it easy to send your photo stories in an e-mail. Watch them on your TV, a computer, or a Windows Mobile–based portable device.[136]

The classroom teacher, Mrs. Pearl, explained that "it [the Photo Story project] was something I had not even thought about doing until the idea was brought to me by Mrs. Auburn." Mrs. Pearl recounted that upon demonstrating a Photo Story project to the current class of students,

> "they were excited - the more they saw, the more they liked. The more they wanted to do it, and even this class happens after lunch, and after lunch they would come directly down and line up right away. They were anxious to come down. This was exciting for them."

In this collaborative classroom/library project, each student designed his or her own PhotoStory about one topic in Ancient China. The Photo Story projects contained images and student-narrated audio, presented in a timed, slide show format. Some students also included special transitions from one image to the next, image effects (such as a watercolor blur effect), and sound effects, which was primarily music from the Photo Story music selections.

In this project, the teacher assigned each student a topic from the textbook unit on Ancient China. The students developed and viewed digital stories in place of the textbook reading and related activities for this unit, with the exception of the geography section in the book, which they read in class. Mrs. Pearl explained that she selected topics that she would highlight if she were teaching from the book and also that were well-represented in the resources, namely books in the library, the reference database World Book Online, and the website, www.mrdonn.org[137]. She noted that she "made it pretty simple for them to find materials." Mrs.

Pearl led the portions of the class that covered note taking, writing a draft, and how much information was required. Mrs. Auburn presented the research and technology instruction in the lesson, including finding library books with the students, using the online research resources, and teaching the students how to use Photo Story.

This social studies class regularly met every day during the class period directly after lunch, from 1:30 PM to 2:10 PM, although six days of the 15-day project took place during state standardized testing days. During this portion of the project, the class periods were shortened from forty minutes to twenty minutes as part of an adjusted school schedule. Each day of the project, the students reported to their classroom first, and walked to the library together with Mrs. Pearl.

3.4.2.3 School 1: Observation of Digital Storytelling Project Development

On an average day in this project, after the students arrived in the library, they gathered either in the teaching area in the library (which happened more in the beginning of the project), or seated in the library computer lab. Mrs. Pearl did not assign seats, but she did require that the students sit with one computer in between them.

Students spent seven full class periods (about 40 minutes, with travel time from their classroom) and six abbreviated class periods (during state testing days) on this project. The students' tasks in creating this Photo Story project were very sequential and fairly parallel across the class at first, with more fluid movement between tasks and differentiated activities among the students as they neared completion. According to the instructions from Mrs. Auburn and Mrs. Pearl, students found information from library books and online resources first and took notes. Then they selected pictures from research databases and Google Images, downloaded them, and imported them in Photo Story, where they sequenced the images via drag-and-drop interface.

Last, the students wrote a script from their notes, in accordance with the order of the images. Theoretically, the next step here would be to narrate and record the script, but the compilation and narration phase was when students started to preview their works-in-progress and recognize that they needed different pictures or more pictures, or that they didn't have enough information to talk about one of their images.

I observed a few instances when students considered their listener-viewers during this work-in-progress viewing. For example, after watching Trey's Photo Story about the terra cotta army, I asked him how people would know that his story was "done" (as his video ended without any indication of a conclusion). Trey explained that he would say, "I'm done!" (emphatically) and Brian, who had been leaning over to watch, chimed in to add, "you could also say 'the end.'" The rest of the exchange went as follows:

> Researcher: What was your favorite thing you learned? Maybe you could end with that.
>
> Trey: That their faces were all different colors. I didn't even know that!
>
> (PA announcements start)
>
> Trey writes this information about the faces.
>
> Trey: I'm done.
>
> Mrs. Pearl collects some papers, instructs those who have not yet finished scripts to take them home. Compliments Nick, who has finished his script. Trey says to her that he read his whole thing to [the researcher] and she said it was good. Researcher and Mrs. Pearl comment on how hard Trey has worked.

By Day 7 of the project, students started recording audio, and this was the point where students started to require more one-on-one assistance from the teachers and paraprofessionals, and when they started to use other spaces in the library to work, particularly to take advantage of a quieter background away from the class during recording. As the students developed more of a continuous piece that could be viewed or listened to from beginning to end, they started to watch one another's projects from where they were sitting in the main lab, or when they were working in small groups on audio in the second library computer lab (and they weren't been monitored as closely by their teachers), they called to each other to watch their videos.

Students helped one another occasionally at School 1, such as when Kaya had some trouble recording her audio:

> Kaya: I'm having a hard time with this.
>
> Kaya and Tanya are working the computers at the kiosk (high table), with one empty computer between them.
>
> Researcher to Tanya: Do you want to help her?
>
> Tanya: Yes. Let's help the people of the world.

By Day 9 of the project, some students had finished, so these students read alone or together on the library's "comfy" chairs or couches, or looked around for new library books. There were three days at the end of the project during which some students were working and some students were finished.

3.4.2.4 School 1: Observation of Digital Storytelling Performance Day

The performances of the completed Photo Story projects took place over the span of two school days, a Friday and a Monday. The students viewed the projects from the teaching area in the library, with the videos projected on an interactive white board. I video recorded the students as they watched the projects, and I also took several digital photographs. The librarian saved the students' completed projects to a flash drive for me. Further discussion of the performance day is presented in Chapter 4.

3.4.3 School 2: Grades 4-5 Book Trailers

3.4.3.1 School 2: Participants and School Setting

School 2 is an independent urban school with grades K-8 in one building. The school is comprised of several arrangements of self-contained or multi-grade level, multi-age level classrooms, depending on the grade level. The class selected for this study was a fourth and fifth grade class, in which the students self-reported ages of 9, 10, and 11 years old. Eighteen students participated in the development of the digital stories, and 17 were part of the viewing and survey group. In the class group, there were 9 males and 9 females. Students in the class represented diverse ethnic and cultural backgrounds.

On the survey, 15 of 17 students reported having a computer at home, and two students skipped this question, but all 17 responded to the next question about how much they use the computer at home. Three students reported infrequent use ("not much" or "once/twice a month"), four reported between 10 and 20 minutes a day, four reported between 30 and 60 minutes a day (though here, one wrote in "except for my mom"), and three reported 60 minutes a day. One student reported spending 60 to 90 minutes per day on the computer at home.

With the students at School 2, the most commonly reported activities on the computer were finding facts for school (13 of 17, 76.5%), gaming (12 of 17, 70.6%) and email (12 of 17, 70.6%). It is worth noting that many students in the School 2 had Gmail accounts, and they frequently opened Gmail and emailed files to themselves as a way of saving and transporting files. Ten of the students (58.8%) reported watching videos on Youtube. Fifteen of the seventeen shared that they own a game system or handheld video game player, and their view of themselves as "gamers" was almost perfectly split: nine responded that they were, and eight responded that they were not. Six students reported infrequent regular use (from no use at all to 15 minutes every other day). Four students said that they play for 30 minutes a day; one reported an hour per day; one reported 60 to 90 minutes; one reported two hours and one reported 2 to 3 hours per day.

Students from School 2 used the open-ended format of the "how often do you play video games" to offer numerous qualifying statements about their game play, in some instances very possibly like they might have been parroting phrases from their parents – for example: "I do not play video games I have sports" and "one to two hours but only on weekends."

3.4.3.2 School 2: Educator Collaboration in Planning and Teaching

My professional connection to this school was the school librarian, who directed my inquiry about digital storytelling to the school's technology teacher, who had an upcoming digital storytelling project in her classroom. When I contacted the technology teacher, Ms. Black (a pseudonym), she was in the process of coordinating a project with the grades 4/5 classroom teachers. In this project, the students in the three grade 4/5 technology classes would develop digital book trailers featuring novels that they had read in language arts. Ms. Black is the technology teacher for grades K-8, and she has been teaching for 12 years.

Ms. Black teaches the students in each of the three grade 4/5 classes one time per week, for one hour and ten minutes per session. The three classroom teachers and Ms. Black collaborated to plan the lesson and communicate to the families my potential involvement as a researcher, but Ms. Black was the teacher who was responsible for the implementation and teaching of the lessons. The letter to the students' parents describing the project is included in Appendix D.

This activity took place over a period of twelve weeks, generally with one session per week from 10:30 to 11:40 AM, though it turned out that I observed on ten occasions, due to classes missed for school functions such as the school musical and days off from school. One class of students was the primary group for the observations and research activities, but there were a few additional students (all of whom had parent consent to participate) who joined the class for some work time on their stories, as well as for the viewing day, survey, and (for some of them) the focus group. This occurred as a result of a school environment in which there was some fluidity to the students' class schedules. Students moved among teachers and rooms for different times of the day and different subject areas, a function of the multi-grade level arrangement, certain subject areas taught by the teachers, and the school's overall climate and organization.

In this digital storytelling project, the students used iMovie, a Mac-based movie editing product, to develop "book trailers" in the style of cinematic coming attractions trailers, for novels that they had read in language arts. The Apple website describes iMovie as easy, drag and drop moviemaking.[138]

3.4.3.3 School 2: Observation of Digital Storytelling Project Development

The technology class met in Ms. Black's computer lab/classroom, which has 28 iMac (desktop-style) computers, numbered 1-28, an LCD projector and printer. The classroom was set up with computers on long tables, in an arrangement resembling a capital letter "I," with short rows of computers at opposite ends of the classroom, connected by long tables of computers in the middle, with some additional tables for working and for materials from ongoing projects. The student chairs in this classroom rolled and swiveled, a feature unique to this setting among the three settings in the study. Figures 4 and 5 show the classroom arrangement of Ms. Black's technology classroom.

Figure 4. School 2, Ms. Black's technology classroom.

Figure 5. Alternate view, School 2, Ms. Black's technology classroom.

The students selected their novels for the book trailers and they also selected their groups. Over the course of the 3-month project, the students developed their book trailers mostly during their technology classes, with some time outside of class during extra time in the school day. Ms. Black guided the students through the project with a mini-lesson at the beginning of each class period. This teaching segment included instruction on the book trailer development (such as a lesson on how to make titles or transitions) and more generally applicable technology skills (such as how to save files to a flash drive). The students generally worked at a pace that suited their groups' needs and working styles, with each group attending to different elements of the project on a particular day. For example, during one class period, students in different book trailer groups may have been recording narration, finding pictures, editing sound, or typing text,

and sometimes this variety was evident within groups, with students working on different pieces of the project individually or subgroups, at multiple computer stations.

Students moved about the room, and actually, around the school, with a fair amount of freedom; without hall passes or much question, Ms. Black granted permission for students' occasional requests to go to the library, classrooms, or lockers to retrieve books, flash drives, or other materials, and in a few cases towards the end of the project, to film a video sequence or take pictures. In the technology classroom, students worked excitedly and noisily, though largely with attention to the task at hand. Many students seemed very comfortable and even affectionate with each other, at times leaning, hugging, and sharing chairs, and frequently laughing, joking, and smiling.

3.4.3.4 School 2: Observation of Digital Storytelling Performance Day

On the day that we viewed the completed book trailers, several students had just finished their projects that morning, and several of them had not yet saved the files for portability (they were still in project form). Because of this and the nearing end of the school year, we viewed the projects on individual computers around the classroom. As described in more depth in Chapter 4, the students gathered around each computer to view the projects, which were located on the computers by the students who made them. The students huddled close together to watch, and they viewed the digital book trailers in basically the same contexts in which they had produced the projects.

3.4.4 School 3: Grade 7 Team Podcast

3.4.4.1 School 3: Participants and School Setting

School 3 is a seventh grade language arts class in a suburban middle school that houses grades 6-8. The enrollment of the school is 474, as reported by the school librarian (via her circulation and student management software). The student body at School 3 is primarily White, with less than three percent students who are American Indian/Alaskan, Asian/Pacific Islander, African-American, and Hispanic, according to information from the National Center for Education Statistics.[139] The class that I observed was actually more diverse than the general student body. Twenty-two and one-half percent of the students are eligible for free or reduced lunch.

This digital storytelling project was a small group project completed primarily by three students upon the request of their teacher, Mrs. Silver (a pseudonym), though some of the activities were shared with the full class of students, including some initial brainstorming and the viewing of the completed story at the end. This instance of digital storytelling, or podcasting, as the teachers and students in this class call it, was something that the students did voluntarily, apart from assigned, graded activities in the classroom.

The three students who made the podcast were Anthony, Abby, and Regan (pseudonyms). Abby was a student in the class that Mrs. Silver selected to be the participants in the study, and Anthony and Regan were also students of Mrs. Silver's, but they had language arts during a different class period. The 20 students in the language arts class in the study participated in a brainstorming session at the outset of the project. The same 20 students became the audience for the showing of the completed Green Team podcast, and the students in the survey and focus group were also from this class.

In the survey, the students self-reported ages of 12 and 13. Nineteen of the twenty students who took the survey answered yes to having a computer at home, and one student skipped the question. The students reported a wide range of amount of time spent using the computer at home, with responses from zero time to five or six hours. The most-reported range was 15 to 20 minutes (by seven students), followed by one hour (four students). The students' most frequent computer activities as reported were listening to music (17 students, 85%) and watching Youtube (16 students, 80%). Gaming was checked on the list for 14 students, or 70%, the same figure as "talking to my friends."

Nineteen of twenty students shared that they had a video game system or handheld gaming device, and thirteen students (65%) described themselves as "gamers," the same percentage of students who noted that they had played a game "yesterday." When asked about how much time per day they play video games, three students reported that they don't play at all, two reported ten minutes or less of playing time a day, four reported 30 to 45 minutes, and nine reported an hour or more of video game play per day. Some students wrote in a wide range for themselves, perhaps considering variation in their days, such as reports of zero to two hours, one to three hours, and two to six hours, with the latter two ranges included in the group of nine who reported an hour or more a day.

3.4.4.2 School 3: Educator Collaboration in Planning and Teaching

The language arts classroom teacher, Mrs. Silver, and the school librarian, Ms. Copper (a pseudonym), reported that they work together frequently to plan and support students' technology-related projects. Mrs. Silver has been a teacher for fourteen years, and Ms. Copper has been teaching for eight and one-half years, three as the librarian at this school. Sometimes the collaborative activities are part of a whole class lesson and sometimes the teacher and

librarian act as guides and facilitators of independent or small group technology-related projects, such as the podcast in the current study and a recent, non-school sponsored video competition. I observed and the teachers shared in their interviews that their collaboration is flexible and informal, and that brief emails and phone calls between classroom and library are often their means of connecting.

In this podcast project, the learning activities took place in Mrs. Silver's language arts classroom and in the school library. Mrs. Copper, the school librarian, reported that the school library has 8,295 titles and 9,903 copies in the collection, with 30 laptops and seven desktop computers. The students completed their small group work – the development of the iMovie podcast – in the library, and the whole group activities took place in Mrs. Silver's classroom, where the classroom has student desks and chairs that the teacher rearranges for different groupings and activities, a teacher desktop computer, and laptop computer with LCD projector. Mrs. Silver also has access to a cart of laptops that she shares with the other members of her seventh grade cross-curricular teaching team, the Green Team (a pseudonym), though the cart was next door in another classroom during my visits to the school.

The Green Team was the subject of the students' podcasting, or digital storytelling, activity. Mrs. Silver and another teacher from the Green Team had recently presented a session on their team model at a state conference on middle schools, and they had invited a small group of students (three) to create a podcast that the teachers could take along and share during their presentation. This student perspective on what it was like to be a part of the Green Team was a success at the conference, so the Green Team teachers, led by Mrs. Silver, thought that such a video would be beneficial for incoming sixth graders (next year's new seventh graders) to learn about seventh grade, the teachers and classes, and life on the Green Team. So the project

development that I had the opportunity to observe was "Version 2.0" of this Green Team Podcast, an extended version of the conference video, adapted to incorporate content to share with next year's Green Team.

3.4.4.3 School 3: Observations of Digital Storytelling Project Development

My observations of the whole group of Mrs. Silver's language arts students involved a brainstorming session (over the course of one class period) to start the project and a performance day at the end of the project. I observed the three students who created the podcast during four class periods over a two-week span. The students, Anthony, Abby, and Regan, worked on the project during "tutorial time" at the school. Tutorial is a daily class period during which students can do homework (as in a traditional study hall), receive tutoring from their Green Team teachers, or participate in elective music classes. Due to the flexible nature of this class period, different combinations of the three students worked on the project on different days, depending on what other tasks or classes required their participation, such as tutoring or music.

Because I did not observe the students during the initial, "Version 1.0" project, my field notes began with the brainstorming session in the class and the students' first efforts to edit and adapt the video for next year's sixth graders. Mrs. Silver did share with me that the three students developed the first version of the video over the course of about ten class periods, with some additional time dedicated to editing and final touches at the end.

Usually the students and I met in their classroom, then we walked together to the library, where Abby, Anthony, and Regan worked on their podcast. They used iMovie on one Mac laptop computer and they saved their work directly on that computer. They used the webcam on the computer for all of their live video, and all of the acting and editing that I observed took

place in the library, though some of the original video scenes were filmed in the classroom or elsewhere in the school.

3.4.4.4 School 3: Observations of Digital Storytelling Performance Day

I observed two performance days at School 3, one main performance of Abby, Anthony, and Regan's Green Team podcast with the class, and one smaller performance on a different day with just Anthony and Regan, during their tutorial time. The class performance was set up in Mrs. Silver's classroom, with students watching from their desks, arranged in rows, with the podcast projected on to a roll-down screen from a LCD/laptop on a cart. We did some rearranging of the room that day, as the desks were originally arranged in a big circle for discussion. The students in the class took the survey immediately following the podcast, and the focus group took place the next day.

Anthony and Regan watched part of their movie, then when Internet problems interfered with the Youtube stream, they paused to talk to me about the focus group questions, and then they concluded their viewing after, when the wireless signal was functioning again. Additional discussion of the observations and student engagement is presented in Chapter 4.

3.5 DATA ANALYSIS

3.5.1 Coding and Data Analysis

During and following my observation time in the schools, I read and re-read the field notes and survey responses, transcribed and reviewed the student focus group and teacher interview

comments, viewed video of the performances, and imported the field notes and video into QSR NVivo qualitative analysis software for coding (Version 9, 2011). Following the surveys at the schools, I also imported the survey responses into NVivo. The organization and analysis of data were ongoing processes throughout the study, an approach that was supported by the staggered start of the three projects in the schools.

The data were collected and coded for emergent categories, or in vivo codes, those themes which emerge in real-life data.[140] The interpretation of data by categorization into themes is a characteristic of ethnographic study.[141] In analyzing the data, I followed an iterative approach to the coding, described in more detail in the following section. I then studied the coded data using several approaches. In NVivo, the term "node" is used to describe a code. I conducted queries of each parent node and child node (the broad and specific categories of the node hierarchy, described further in the next section) to study the related actions, discussion, and context. I marked relationships among the nodes; for example, engagement (how students attend and to what they attend) is related to actions (how students demonstrate attention) and emotions (what students say they feel when they are attending). In another example, in reviewing the nodes related to the creation of digital stories, I noticed that students called upon familiar or similar experiences and terminology when creating and viewing digital storytelling, such as the student who pretended to be a drive-thru restaurant employee when testing the audio equipment. Therefore, the nodes of student terminology and similar experiences demonstrated a relationship, and this connection is represented in the conceptual model presented in Chapter 4.

I interrogated the data through repeated reviews and refining of codes (as coding shapes data analysis) and study of the relationship among nodes through code queries, as well as via text queries and word frequency queries, which I studied in several formats (tag clouds, word trees,

tree maps, and cluster analyses) as a way to find relationships and themes in the data. Reviewing the findings through the multiple theoretical perspectives of Rosenblatt, Mackey, and Sturm supported analysis of the results. Interpretation of the findings through the theoretical framework is presented in Chapter 5.

Miles and Huberman explain that in qualitative research, "coding drives ongoing data collection." Coding is an iterative process, with repeated reviews of data and both deductive and inductive analysis.[142] Because this study is exploratory in nature, there was not an existing coding scheme to apply to the data. I developed my own coding scheme for data analysis, which is described below, and this scheme is also presented in Appendix C.

I reviewed and coded the data in broad, general categories first, with operational, quickly identifiable codes.[143] In the first review and coding of data, these "parent" codes included the following categories:

- Student(s) create(s) digital story
- Student(s) view(s) completed stories
- Teachers
- Researcher roles

These codes identified actions and discussions of the students, teachers, librarians, and adult facilitators, as well as my activities as the researcher. The "researcher role" codes were similar to the system used by Solomon in her dissertation on digital storytelling among first graders.[144]

After the first round of coding, I added "child" categories as a second level hierarchy of the "parent" categories listed above. These child codes described more specific attributes of the tasks. For example, under the parent code "student(s) create(s) digital story," child codes included "student research and information gathering approaches" and "student views work-in-progress." In the iterative process of coding, I added third- and fourth-level codes to some categories of the hierarchy, to represent even more granular aspects of the activities.

The development and analysis of the coding scheme helped to shape the themes and conceptual model presented in the study findings in Chapter 4. For example, the following set of codes pertains to those digital story features which draw students' attention:

- Student(s) view completed stories (parent code)
    - Features of digital stories which draw student attention (first-level child code)
        - Relevant to student(s) (second-level child code)
        - Placeness, realism (second-level child code)
        - Images and special effects (second-level child code)
        - Friends, peers (second-level child code)
        - Boring (second-level child code)

For the review and analysis of the videos of students watching the completed stories, I developed a set of codes to document students' behaviors as they watched the digital storytelling projects. The codes for this section included such descriptions as "laugh," "touch or lean on student," and "tap or bounce," and I generated the codes through my field notes and through repeated reviews of the videos.

The child-level codes for the teacher activities reflected whether the actions and dialog were direct instructional steps, such as demonstrating how to use iMovie or Photo Story, or guidance and facilitation, such as when Ms. Copper provided resources and space in the library for the School 3 Green Team podcast. I also coded for classroom management strategies, such as when Mrs. Pearl collected student notes at the end of each class period, as the classroom management of the teachers was a key factor in the children's behavior and their approach to developing and viewing the stories. Components of the project that would inform best practices for digital storytelling were coded as "recommendations for teaching and facilitating."

After the first round of coding, I added the child-level codes described above, and I also added a parent-level code for "general research study and report notes." I used this code to denote topics such as survey logistics in the classrooms and "quotable" phrases. Gorman and Clayton remind researchers to pull quotations that are "particularly illustrative or poignant, because exact quotations lend authority to the case description, as well as humanize the study narrative."[145] In reviewing my field notes, I noticed that I had recorded numerous school and environmental factors, such as ringing bells, PA announcements, scheduling concerns, and state testing, so I added the parent-level code "school environment, class structure, schedule" to help organize and study these factors.

3.5.2 Trustworthiness

Trustworthiness was established though methods of triangulation (checking for consistency among the data collection methods), member checking (checking accuracy of my understanding with the students and teachers), and peer debriefing (sharing and discussing findings with a

colleague). These approaches were used to help ensure complete and credible findings.[146] An example of triangulation among data sources is the following:

- Analysis of themes show that students in all three settings commented that music made them pay attention to the stories.
- In the teacher interview, a teacher (Ms. Black) described students' interest in creating music on Garage Band.
- During the digital storytelling performances, students smiled, danced and bounced to the beat when they heard music.

For the practice of member checking, I repeated what I thought I heard participants say (for confirmation) and asked questions to ensure that I understood what they were doing or saying. In terms of peer debriefing, I shared my ongoing findings with my dissertation adviser to discuss the processes of collecting and analyzing data.

3.5.3 Limitations

This exploratory approach affords a holistic look at the experience of the listener-viewer in digital storytelling and more generally, a view of how digital storytelling is structured and carried out in a classroom and school library setting. Because I worked with teachers and librarians who had already selected the digital storytelling activities, as the researcher, I did not serve a role in choosing the software or genre of the digital storytelling activity. In all three settings in this study, the teachers and librarians facilitated digital storytelling as an informational text, and not as a work of fiction, which is perhaps a more typical and familiar storytelling genre.

As such, the genre itself may be considered a limitation, in that all three study groups of students and teachers used digital storytelling as a platform for information. The results of the current research will support and reveal focal points for future studies, including potential experimental research designs which may encompass additional genres of digital storytelling.

In terms of parameters, this study is about digital storytelling as a storytelling activity in the school library/classroom. The study is not measurement of learning outcomes or student achievement, though this could be a direction for future study. The study does not evaluate or formally compare digital storytelling applications, nor is the study designed to evaluate teachers' and librarians' methods of implementing digital storytelling. The questions in the survey instrument relating to students' computer and video game use were included to provide background about the students' technology use, not to show correlation or cause and effect between these activities and digital storytelling.

This study is about classroom engagement and responses, not psychology or consciousness. With that note in mind, it is difficult to identify and observe "engagement." The behavior that an individual demonstrates may or may not accurately reflect engagement with a text or video. It is a challenge to isolate engagement from learning, memory, and other aspects that influence students' reporting of the multimodal experience of digital storytelling. Connections between digital storytelling and information visualization are beyond the scope of this study.

As described, an ethnographic orientation is one of the means of investigating how digital storytelling is really being used in school library/classrooms. A limitation of the participant-observer approach is the potential to lose objectivity in the research setting (observer bias), or that participants will behave differently with an observer in the room (observer effect).[147] There

is a potential for observer bias due to the convenience method of sampling, i.e., through professional contacts. The focused ethnographic approach seems suited to observing this type of learning activity, though length of time spent observing in each setting (which differed according to the activity) could be considered a limitation. The splitting of performance days and survey/focus group days in some instances could be a limiting factor.

4.0 CHAPTER FOUR: STUDY FINDINGS: RESPONSES OF LISTENER-VIEWERS

4.1 RESEARCH QUESTION 1: HOW DO STUDENT LISTENER-VIEWERS RESPOND TO AND ENGAGE IN DIGITAL STORYTELLING IN THE INTERMEDIATE CLASSROOM AND MIDDLE SCHOOL LIBRARY?

In preparing to conduct this study, I anticipated that watching the "performance" part of the digital storytelling process would be the stage at which I could observe the students' body language as they viewed the stories, where they turned their attention and why, what they were doing as they watched, and what they said during and after the digital stories. However, there were additional dimensions that I had not anticipated with regard to the students' viewing, particularly in terms of their dual roles as both creators and audience in the digital storytelling process.

In classroom and library digital storytelling, the roles of storyteller and audience are not as clear-cut as in traditional storytelling. In this context, students assume dual roles as creators and viewers. The most frequent and important "viewer" or audience for digital storytelling seems to be the self, as shown by the students in their work-in-progress viewing and editing processes. Just as the line between creator and audience is difficult to ascertain, the processes of creating a story and viewing a performance of the story are also less defined and less separated than in traditional storytelling. Students viewed their stories and often, their peers' stories,

throughout the development process – not just at the "end." It may be appropriate to designate two stages of the "performance" of digital storytelling: formative performance, or the work-in-progress viewing, and summative performance, the viewing of the story after the digital file has been converted from a project, or editable file, to a movie file, which can no longer be changed.

The following sections (subsections of 4.1) present the results for Research Question 1, regarding student responses to digital storytelling. Throughout the discussion, aspects of the classroom environment and teacher and student interactions are described, as these factors are very closely related to how digital storytelling functions in the classroom and school library. This discussion concludes with the presentation of a conceptual model of student responses to digital storytelling in the classroom and school library (in subsection 4.16).

4.1.1 Participant-Observation in Intermediate and Middle School Settings

In the participant-observer, ethnographic component of the study, I first observed the classroom teacher, school librarian, and students in the instruction and development of the digital storytelling projects at each school – not only in the listening and viewing portion at the end – in order to gain a sense of the classroom dynamics, context, and learning environment. This component of the observations and data analysis was critical in understanding how digital storytelling is practiced as a classroom and school library activity. Studying how the students developed their projects was particularly important in reaching conclusions related to when students view digital stories, especially during the editing phase, and how these activities connect to the traditional storytelling model. Watching the story development process also informed recommendations for facilitating digital storytelling in schools and libraries, and this is explored in greater depth in Chapter 5.

I came to understand through the research process that being a "participant-observer" in an intermediate/middle school technology setting meant involvement at different levels in the students' digital storytelling. As described in the data analysis section, I coded my interactions as "researcher roles," and the roles that emerged were conversation, tech help and troubleshooting, and consultant. Examples of the interactions typical of each role are presented in Table 8.

Table 8. Researcher roles and examples of interactions with students.

Researcher Role	**Examples of Interactions with Students at School 1, Ancient China Photo Story**
Conversation	Researcher: How are you doing? Trey: Good. Want to see my Photostory? Researcher: Yes. Trey: It's about the Terra Cotta army. They guard the tomb and they have horses. They're clay people and no two faces look alike.
Tech Help and Troubleshooting	Nick to Researcher: All my pictures got deleted. He is looking at a photo of a Buddhist temple. While trying to find Nick's image folder, Researcher to Nick: How many facts do you have? Nick: 7. Researcher: What do you know about Buddhism? Nick: They worship one god. Researcher: It's a religion, right? Nick: Yeah and it's one of the most important in the world. After looking for his folder of images, Researcher realizes

	that Nick was absent the previous day, and he did not make an image folder with the class. In addition, Nick is not logged in under his name. Researcher asks Nick to log out and log back in with his user name and password. After he does so, the screen shows puppy wallpaper. Nick: Now it's me. He types in www.google.com, goes to Google Images.
Consultant	Calvin to Researcher: Does this look like a panda attacking? (pointing to photo of panda with teeth bared). Researcher: Why do you want him attacking? Chris: To show how he protects his cubs. Researcher: Then I think that photo looks like the panda is going to attack.

In addition to roles that developed as I interacted with the students, another researcher role that I encountered was an educator-to-educator consulting and peer reflecting role that I was invited to share with the technology teacher at School 2, where the students created digital book trailers. After most of the classroom lessons at this school, Ms. Black invited me to stay for discussion, sometimes over lunch, at which time she would ask for my perspective on the day's activities. She inquired about any observations that I wanted to share, how the children were progressing, and any student behaviors that might be helpful for her to know about as the classroom teacher.

Interacting with students and teachers as a participant-observer allowed me to get to know them and learn about their work, though I was careful to resist my teacher instincts to intervene with directions and guidance, especially regarding student behavior of an off-task

nature. I offered assistance as requested by the students and teachers, and though my influence and presence were part of the classroom activities and thus the research findings, I attempted as much as possible to observe and participate in the course of events and the children's tendencies as they naturally progressed.

4.1.2 Responses to Work-In-Progress Viewing of Digital Storytelling

There was a significant amount of viewing during the developing and editing process across all three settings, but particularly with the students who used iMovie, who were the fourth and fifth graders who made digital book trailers at School 2 and the seventh grade team podcast at School 3. The students at School 1 also previewed their Photo Story projects, but with a less complicated interface and fewer effects to work with, more often they selected frames for editing directly from the navigation panel, rather than watching the images from beginning to end. A screen capture of Photo Story is presented in Figure 6. The iMovie application is visible on the computer screen from the image of School 2 in Figure 5.

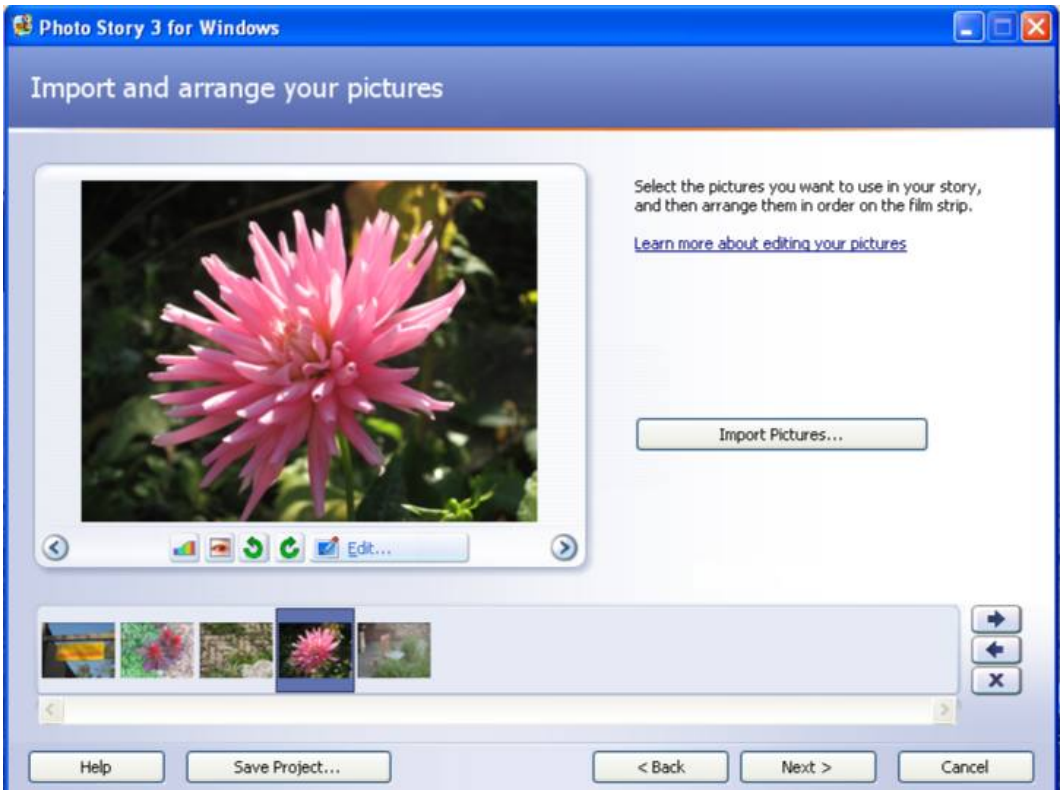


Figure 6. Screen capture of Photo Story, used by students at School 1.

Many students from School 2 and School 3 followed a production process in which they would add a new frame, transition, scene, or sound, and then they would "play" and watch that new segment (most common with the School 3 students, whose video was about seven minutes long) or watch the whole video from the beginning (most common with the School 2 students, whose book trailers averaged 2-3 minutes in length). Work-in-progress viewing happened individually and within the project group, when students reviewed frames they themselves had completed so far, as well as across groups, when author-creators shared their ongoing work with classmates who weren't part of the project team.

Viewing the work-in-progress either as a preview video or by clicking frame-by-frame provided an evaluation tool and a form of enjoyment for the students. For example, here, Tanya at School 1 has just recorded her narration of her story on Marco Polo, and she listens to the playback.

Tanya records her script (reading from her lined paper, take #1) for about 45 seconds, and after pausing for a moment, she stops recording.
Researcher: What do you think? (as Tanya plays back the audio in her headphones)
Tanya: That was not good.
Researcher: Why?
Tanya: It sounded like a robot.
Tanya records again (#2), not stopping between slides. She does one long take.
Researcher: Did you like it this time?
Tanya: Yeah.
Researcher: What's better?
Tanya: I did it more straight. (She moves her hand to show a smooth motion).
Tanya adds "by Tanya M" to the title.
Tanya: I did the whole story on one picture. She reviews the pictures and sound.
Tanya: I'm one off. I forgot one stupid fact.
Researcher: Do you need to write it down?
Tanya: No, I'll just delete it [an image of Marco Polo]. I already got one of him.
She records again (take #3).
Tanya: Done. Perfect.
Tanya has done one take (straight through the script without stopping) three times.
She plays the story back on headphone.
Tanya watches full story.
Tanya: Yes, I'm smart.

4.1.2.1 Kinesthetic Viewing and Editing On-the-Fly

In addition to viewing with a critical eye and ear, students seemed to enjoy watching the frames that they had completed so far, or at School 2, even the sound waves of their sound tracks in Garage Band. Around the time that the peer teaching of Garage Band was spreading through Ms. Black's class at School 2, I realized that I had to expand my concept of listening and viewing in digital storytelling, as students didn't just listen to sounds and watch images – they experienced the stories kinesthetically. The School 2 students "watched" music, some with noses practically pressed to the computer screen, intent on the movement of the sound waves, and when viewing and listening to their projects during editing, they danced, hopped in their seats, played air guitar, moved to the beat, twisted in their spinning chairs, and showed their happiness or displeasure with fist pumps, hugs, jumping up and down, and exaggerated arm-flailing and pushing their chairs-on-wheels back from the tables.

At School 3, this work-in-progress viewing was particularly integral to the development of the content of the team podcast, possibly because this project consisted primarily of student acting. The students rarely worked from a script, choosing instead to just act out a scene, watch it, and decide to keep or re-do the scene according to how they thought it turned out. They even vocalized this process as they worked. For example, this exchange happened when Anthony and Regan were filming a segment on a pre-writing exercise called "Big I,"

Anthony: What am I doing?

Regan: Wing it.

Similar extemporaneous performances were part of some students' work at School 2. For example, two students working on a book trailer for *Because of Winn-Dixie* narrated a section of their trailer by recording their voices in iMovie with no script or notes. When they wanted to change something, either because of what they heard on the playback or right away after a take, they just recorded it again, and did so at least four times.

Simultaneous viewing, editing, and addition of content often characterized the work of the School 3 students. For example, in this exchange, Regan tried to call Anthony over from his seat on a library beanbag chair to join her to view what they had filmed so far, and she casually made edits and added to the piece while she watched and waited for him to join her:

Regan: Ready to view the whole thing? From where we started?

She adds a capital letter to a word in a text box.

Regan: I wonder if we can add clip art. Probably not.

She opens PhotoBooth and takes four pictures of herself in succession, holding a book open. She chooses an Andy Warhol-like silk screen treatment and takes a still image/screen capture of that.

Regan goes through the music choices in iMovie.

Regan: Now we can add text.

Anthony is filling out a paper for another class.

Regan: Anthony come here.

The bell rings and they clean up to go.

Anthony, Regan, and Abby's expertise with iMovie technology was unique among the schools, and their perspective as "veteran" listener-viewers and author-creators was evident in their conversation with me and their focus group responses.

4.1.2.2 Student Terminology for Works-in Progress

Terminology became an intriguing aspect of observing and talking to students as they made and watched digital storytelling. They used a blend of phrases often spoken by their teachers and their best descriptions of what they were doing. For purposes of the current study, noticing this language helps in understanding student engagement as participants in digital storytelling. In future research, student technology language could be a rich area for discourse analysis. Some examples of student terminology are presented in Table 9.

Table 9. Student terminology for technology activities, with invented words and their conventions in boldface type.

Student Comments	Technology-Related Actions and Steps
My favorite thing is panda bears and I couldn't even see one good picture**. I can go up on Google and look that up.**	The student can go to the Google website
One of my friends wanted to do that, so we like, I was directing it and **we made this video camera and we tried to post it on Facebook** and it was hilarious.	The students made a video
In my thingy I almost messed up cause I was like reading, and forgot about changing the slides, so I'm like . . .	"Thingy" is the Photo Story
Can we make our Microsoft now or should we get more information? I already got all the information from World Book.	Student is referring to getting started with Photo Story
I don't know what else I can get on.	Student is referring to what resources he should search next
Student asks about **"audio voicing us?"** Researcher: Yes, I am going to audio voice you. Is that ok? I'm going to put this [audio recorder] mmm . . . I think we can put this here. It will probably be ok.	Student asks about the audio recording of the focus group
How do we **drag this Garage Band thing over to iMovie?**	Student is trying to import an .mp3 file into iMovie
You can adjust it on there. **You can like, de- , like make the background volume less, or the music less.**	Student answers a question about adjusting sound on iMovie
Regan reviews the existing video and sets up the program to film. Another student asks her what she's doing, and she replies **"podcasting."** He asks what it's about, and she says that "we're just adding to it."	Regan describes her iMovie project to a student in the library
Regan: Stupid. (talking to computer) Researcher: What's the matter? Regan: **Mouse got glitched up.** She restarts the computer.	Regan's Mac laptop froze and she was unable to move the cursor

4.1.2.3 Peer Sharing and Peer Teaching

Peer sharing and peer teaching were evident in all three settings in the editing phase of project development of digital stories. At School 1, where the students were experiencing Photo Story for the first time, some of the features that the students figured out for themselves, such as music and transitions, spread through the group through sharing and teaching. For example,

> Brian finds Chinese-sounding music in Photo Story.
>
> Researcher: Why did you pick that one?
>
> Brian: Um, so like it will go with the story, with like, what they listened to and what they did.
>
> Brian goes over to Nina to tell her about the Chinese music. Brian puts on headphones to listen to Nina's story, then he takes them off after a few seconds.
>
> Nina: You gotta listen to the whole thing.
>
> Brian: That'll take forever.
>
> He listens to the whole thing anyway.

At School 2, the spinning chairs on wheels seemed to facilitate students' discussion across project groups and within their groups with students working at different computers. Students often called to each other and wheeled across the floor, sliding in and out of different computer stations in their chairs, as well as walking around to visit other stations, and Ms. Black permitted this movement about the room. More than once at School 2, students announced their "worry" about how something was going to sound as part of their request to have classmates

listen to their soundtrack in Garage Band, and they also queried classmates for what they need to add next. For example,

> Laura is working in Garage Band. She creates some music and calls Jamie over to listen.
>
> Laura: What else can I add?
>
> Jamie: Piano.
>
> Laura: Yeah, I don't have any piano.

In Ricki Goldman-Segall's writing on digital ethnography, she likens students' tendencies to share or work alone in technology endeavors to "hedgehogs and foxes," which she explains is a borrowed reference from Isaiah Berlin's writing, *The Hedgehox and the Fox: Tolstoy's View of History*. According to Goldman-Segall, kids who are foxes scamper about the room watching and learning, and in watching others work, they think about and re-envision their own projects, inspired by fluidity and new ideas. Kids who are hedgehogs burrow away and keep to themselves while they work, holding off on sharing until the work is completed, in order to allow their creativity to flow uninterrupted and to keep their initial vision undisturbed.[148]

4.1.3 Student-Creators and Their Listener-Viewers

Mrs. Silver at School 3 explained to the three podcasters that there would be two specific audiences for the Green Team podcast. The first audience was attendees at the middle school conference where Mrs. Silver presented about the team teaching concept, and then, for the version that I observed, the second target was to introduce the Green Team to incoming sixth graders. Consideration of how viewers might react to the digital stories was evident on a few

occasions in the three schools, mostly as part of informal self-evaluation talk from the students, such as making sure a project wasn't so long that it would bore the listeners.

4.1.4 Student Engagement in Creating Digital Storytelling

Although the focus of the current study is students' responses as listeners and viewers of digital storytelling, it is important to address the students' dual roles as audience and author-creators in order to help understand this activity in the classroom and library setting. On self-evaluations in Ms. Black's class and in conversation, many students voiced their enjoyment of the projects, including some enthusiastic comments of "I love it!" "I enjoyed doing it," "It's fun," and "I hope we do it again." Not all students assigned the highest possible 5 for their enjoyment of the activity on the self-evaluation in Ms. Black's class, and a few mentioned how iMovie and the book trailers were both fun and hard. Some comments that expressed dislike or disappointment corresponded to negative experiences with the topic or group members, such as the 3 that Emma gave for her enjoyment, accompanied by a resolution for next time to "do a different book" and "choose a book I really like." Another student who gave a 5 for his enjoyment of the activity still noted that what he would do differently next time was "not work with [classmate]." The students' positive and negative feedback is valuable in crafting recommendations for best practices in school and library digital storytelling.

In coding the field notes from all three schools for "student motivation, engagement, and enjoyment," a range of behaviors and direct comments suggest that students are interested and motivated by digital storytelling as author-creators. For example, time seemed to pass quickly for students working on their projects at School 1 and School 3. Upon hearing his teacher's announcement that there were ten minutes remaining to work, a student from School 1 asked,

"Ten minutes? We just got here." Several times at School 3, the students took 10-15 minutes to get organized to record their podcast, and became so involved that they worked through the end of the 40 minute class period and asked their next period teachers to let them stay and work. (In most cases, they were permitted to do so).

Some students took a playful approach to what was for them a novel experience of recording their voices on a headset. Tanya at School 1 checked her microphone sound by pretending to be a McDonald's drive-thru employee, placing the headset on her head and saying, "Welcome to McDonald's, may I take your order, please . . ." She continued to hold a back-and-forth conversation with herself, placing an order for curly fries, until Mrs. Auburn gave her a signal that that was enough talking for the sound check. When the sound came through successfully, Tanya smiled and commented, "I sound smart!"

School 2 students also found a chance to play as they learned how to use Garage Band to add music to their book trailers. As Ms. Black recounted,

> And it was interesting to note that they completely veered off of the idea at some point of doing the song, just for the book trailer, and started to use it as a device for recording their own voices just singing songs . . . Just having fun, and that's ok. I'm totally ok with that, that they were enjoying technology.

Mackey uses the term "text tinkering" to describe an "initial, playful" level of engagement with a text, which she observed in her studies of students' exploration of multimedia texts. She proposes that tinkering may serve different ends, according to the user's determination of the salience and purpose of a task. Play might form a preliminary, overview-type engagement that provides orientation to a format, or it might actually be the intended endpoint of engagement for a reader content to play, rather than pursue deeper engagement.[149]

At School 3, where small groups of students frequently make podcasts for class and for fun, lots of exposure and experimentation with technology supports confidence and skill development, as described this way by Mrs. Silver:

> I'm so excited that they know how to use the technology, and that they're willing to use the technology and they're not afraid of the technology. Because I don't think it's always been that way.

In a separate interview, Ms. Copper, the librarian at School 3, explains how the students continue to make podcasts for fun, even after class assignments have ended:

> Oh my goodness. Yeah. And it's funny, [be]cause I still have - she's [Mrs. Silver] done with her projects, but I still have kids coming in, and I let them. Like, they want to go and create different podcasts for random things. Like, I'm trying to think - oh. Mrs. Silver's team's doing this decades dance party. And some of the kids want to create, just on their own, a podcast from whatever decade they have.

Ms. Copper also recounted how students often came to the library during tutorial (study hall time), after they ate lunch, or even while they ate lunch, to work on podcasts in the library. The School 3 teachers' support of students' experimentation with technology corresponds to the recommendations of Ito et al in the Digital Youth Project to honor the learning opportunities that come through digital experimentation.[150] The podcasters in School 3 – Regan, Anthony, and Abby – might even be described as "passionate affinity learners," to apply Gee and Hayes' term, or perhaps on their way to such a characterization, with their dedicated to video editing outside of class and their self-described enjoyment of watching student-created videos like theirs at home, to pick up tips and offer critique.[151]

All five teachers and librarians in the study reported a high level of student engagement and motivation in the development of digital storytelling projects, and this finding triangulates with my observations and the students' direct comments. As Mrs. Silver noted, other teachers also connected the students' motivation with skill development and confidence. For example, Mrs. Auburn comments on the intangibles of the Ancient China Photo Story:

> Well, I think it gave them some independence in working with a project. You know, they sat at their own computer, and actually, I thought we were going to have to kind of hover over them when they recorded. And they just jumped right into that on their own. They didn't need us there at all, really. And I thought that was great.

Mrs. Pearl, the sixth grade classroom teacher at School 3, recalled during our interview that her class was lined up at the door at the start of her class each day, ready to go to the library for digital storytelling.

A different aspect of engagement is body language, and in my observations in the classroom and library, students showed through posture, actions, and facial expressions that they were engaged in their work on the digital storytelling projects. On the very first day of work at School 2, students were eager to begin their project while Ms. Black was demonstrating iMovie, talking excitedly and sticking their heads under the pink paper covering the computer screens (pictured in Figure 7), which students were instructed to keep down when the teacher was teaching.

Figure 7. Pink paper covers on computer screens, Ms. Black's strategy for maintaining student attention when giving instructions.

In a group of five girls at School 2 working on a book trailer for *Frindle*, I observed that on different occasions throughout the project, the students engaged in active discussion, joking, and debate; they worked on one or two computers together, standing, kneeling, and sitting in close proximity to each other, sometimes leaning or draping arms around one another, usually with lots of close-up examination and pointing and touching of the screen; and excited reaches for the mouse to do something with the project.

Numerous aspects of the digital storytelling experience required the superlative, according to the students, including:

- PhotoBooth is awesome! (after seeing this Apple picture-taking application for the first time)

- It was good. It was fantastic. It was awesome. (reporting on an updated version of their book trailer after figuring out how to add a favorite song)
- Yes! (several fifth graders in unison, upon learning from their teachers that they will get to use iMovie again in sixth grade)
- Oh my gosh, this sounds like video game music! (hearing a Garage Band mix for the first time)

4.1.5 Performance Day Viewing in the Classroom and Library

The performance day arrangements of seating, technology for viewing, and process of sharing stories differed by school setting. Photographs of the classroom and library spaces and arrangements for the performance component of each school are presented in Figures 8-13.

At School 1, the sixth grade students were seated in rows of chairs in a semi-circle configuration, as shown in Figures 8 and 9. The Photo Story files were opened by the librarian on one laptop on a cart, via networked drive, and sound was projected through external computer speakers. The order of the presentations was largely random, as Mrs. Auburn opened files as they were listed in the folder, though at times, some students asked for theirs to be shown next. The Photo Story projects were displayed on an interactive white board, via LCD projector mounted on the ceiling. The lights were dimmed, though the whiteboard was positioned in front of the windows, which let in natural light. This teaching area in the library is open to the rest of the library, with bookshelves defining the space.

Figure 8. Library space for performance day of Ancient China Photo Story projects. The librarian is seated on a desk at the far end of the first row, and she is opening the students' project files from a laptop on the cart.

Figure 9. Student seating for School 1 performance day. The whiteboard where the stories were projected is just out of the frame, at right.

On School 2's performance day, the fourth and fifth graders gathered around individual computers in the technology classroom, and they moved from computer to computer, depending on where the files were stored. iMovie files can be saved for viewing on other machines, but the students and Ms. Black hadn't completed this phase yet. Some students knelt and some students stood to watch the digital book trailers, and they gathered close together to watch, as shown in Figure 10. The students opened and played their own groups' projects within iMovie, via the hard drives of each computer, and the class viewed the videos directly on the computer screens, with sound from the computers. The order of presentations was based in part on moving from one computer to another one nearby in the classroom, and in part on which students requested to be next. The classroom lights were on, and the classroom door was closed.

Figure 10. In School 2, the students viewed the digital book trailers by gathering around individual computers.

Figure 11. During the School 2 performances, students stood and knelt around the computers to view the digital book trailers. They moved from computer to computer as a group to view the different projects.

For the performance of the podcast at School 3, the seventh graders were seated at their (individual) desks in the language arts classroom, with laptop computers on the desks for taking the survey after viewing. The students' podcast was presented on the roll-down screen, projected from an LCD projectors and laptop on a cart. The language arts teacher started the video from Youtube. The classroom lights were dimmed, and the classroom door was closed. School 3's performance set-up is pictured in Figures 12 and 13.

Figure 12. Students set up the projector and laptop for the performance of the Green Team podcast.

Figure 13. Seventh grade students watch the Green Team podcast at School 3.

As described in Chapter 3, the amount of time spent creating and viewing the digital stories varied by setting, but common to all three settings was that the amount of time dedicated

to the performance of the stories was less than that spent creating the stories. The breakdown of time spent creating and time dedicated to the performances is presented in Table 10; it is important to note that this table does not include students' informal viewing time, which was recorded anecdotally but not measured.

Table 10. Amount of time spent making digital storytelling and listening and viewing digital storytelling.

School	Class Sessions Spent Creating Digital Storytelling Projects	Class Sessions Spent Listening to and Viewing Digital Storytelling
School 1 – Ancient China Photo Story	11 class periods	2 class periods
School 2 – Digital Book Trailers	9 class periods	1 class period
School 3 – Team Podcast	10 class periods (for Version 1.0, prior to my study) + 4 class periods during my study = 14 class periods	Part of 1 class period

4.1.6 Conceptual Model of Student Engagement and Responses to Performances of Digital Storytelling

Mackey notes that "listening affects the body as well as the mind,"[152] and observations of the students as they listened and viewed the digital stories were critical in shaping the findings of this study. The analysis of classroom observations and information provided directly from the students and teachers, showed some anticipated and some surprising responses and ways of

engaging that were similar across the three school settings, as well as interactions and responses unique to each setting.

Upon review of the coded data, six categories of student response emerged:

- What draws students' attention
- What students do
- How students feel
- What students learn and get out of digital storytelling
- What experiences students think are similar
- What students want to do next

From these categories, I developed themes and a conceptual model that describes the essence of responses to digital storytelling in the school library and classroom. This conceptual model, presented in Figure 14 below, synthesizes the findings of Question 1 of this research study (about student response and engagement), and will be used to extract new study questions, to apply to practice, and to contribute to research on digital storytelling.

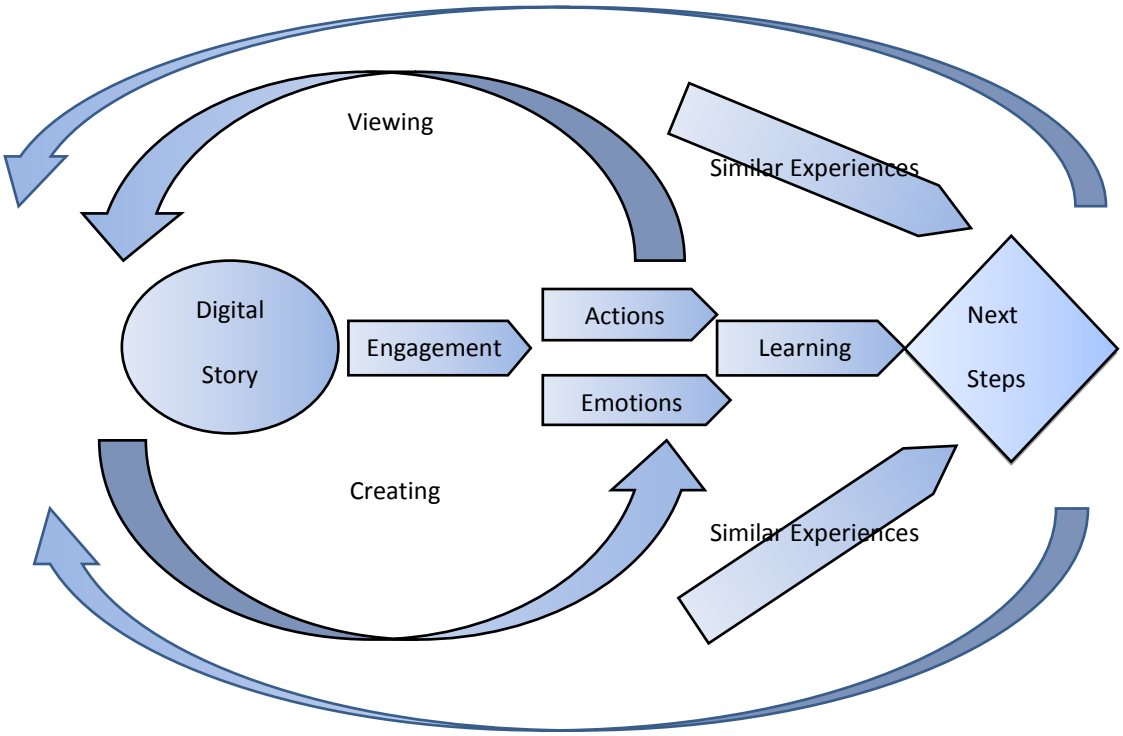


Figure 14. Conceptual model of responses of digital storytelling.

"Digital Story" forms the first piece of the conceptual model. This area of the model represents the story, which the students create and view. The students' dual roles of creators and tellers and the fluid nature of this process are represented in the model. "Engagement" captures students' responses to such story characteristics as personal relevance, entertainment value, story, sound, images, and whether their friends appear in or made the video. Also included in the theme of engagement are those aspects that caused students to become less engaged, such as featured they disliked and stories they described as boring.

Engagement is demonstrated by "Actions" - the students' body language, comments, interactions with each other, and other observable ways of engaging in performances of digital storytelling. Actions reveal and represent "Emotions," the part of the model which encompasses the students' emotional reactions to viewing and, to some extent, creating digital stories,

including pride, shyness, embarrassment, happiness, and social connections with peers. Actions and Emotions are related, and because they happen simultaneously, these two components of the model are presented in parallel positions.

"Learning" represents the content knowledge and technology/information literacy skill development supported by engagement, as well as less tangible learning, such as the opportunity to experience visual and auditory modalities, establishing a sense of belonging, and having something to share. Learning and the next stage of the model, "Similar Experiences," are processes which shape and inform one another in a fluid, continual way. Similar Experiences, which can originate within or outside classroom digital storytelling, demonstrate students' evolving process of understanding digital storytelling and how they relate digital storytelling to familiar activities, such as recording voices as part of video games and watching movie trailers, Youtube, and comedy shows.

"Next steps" represents immediate and longer-term aspirations, such as suggestions of new topics for digital stories and hopes to try more advanced digital storytelling. In the model, Next Steps connects back to Digital Story, Viewing and Creating, and then to Engagement, as Next Steps lead to new digital storytelling experiences. The following sections explain each of the themes in further detail.

4.1.6.1 Engagement

Based on analysis of my observations and the feedback that students provided in the survey and focus group, students paid attention to digital storytelling features and approaches that appealed to them, such as funny moments or action sequences, but they also provided so much detail on what they didn't like that it can be argued that they also paid fair attention to what they did not like (or maybe the other way around – that something unpleasant drew their attention), such as

"annoying sounds," excessive background noise, blurry pictures, and breathy or stuffed up-sounding voices in the narration.

Many of the changes that students suggested to improve the digital stories were related to aspects that would help them understand the piece better, including clearer explanations, better sound and volume, and adjusted pace. One student at School 2 described in the focus group how he has to pay attention when he doesn't understand in order to try and understand the story better, and one student in the survey reported concentrating on "*The Giver*, because it was confusing." Several students related pace of the story to their understanding, describing a preference for a slower pace or the need to slow down because "it makes more sense this way," and noting that a slower pace allowed them to think about what was going on, to hear all the details, and to hear clearly. Some students did qualify their notes on slowing down with warnings about going too slow; for example, "I don't like things to be going too fast, but I also don't want things to drag on all the time" and "because when they go too fast I can't hear what they're saying and when they go slow it take[s] a longer time." Another student also addressed this balance of content and efficiency: "I want to finish it but I want to catch the details."

Although most comments about pace described being able to hear, one student in the School 2 survey mentioned having time to read text on the screen, noting that with a slow story, "I can read the words" but that his preferred pace is "[in between] because I can read it and it is not going too fast." With students in grades 4 and 5, School 2's group was the youngest of the three settings, so developing reading skills may be a part of this student's preference for the pace of a story.

In all three schools, students indicated widely varied preferences for pace. Although some students explained a preference for slower or medium pace to help them think, hear, and understand, others conveyed that a faster pace "kept me paying attention"

Sound seemed to be a prevalent concern at School 1, where in an open-ended survey question, 5 out of 9 students who named something to change gave some version of "talk louder" or turn up the volume, and two thought that music should be added. More students, eight, mentioned some version of needing to "hear it better" in the open-ended survey question about what they didn't like, and two mentioned music. In terms of sound, the volume was limited in that setting to the maximum level on the external computer speakers, and in the large, open library space, it was a concern to the students, as well as to Mrs. Pearl, who described in the interview that, "they [the students] couldn't hear it."

Music was not a feature of Photo Story that Mrs. Auburn taught directly at School 1, and the same was true for Ms. Black at School 2 with Garage Band and iMovie. As such, the music that appeared in the videos was the outcome of students teaching themselves or learning from their peers, and yet, it was one of the features that that caused the most observable responses and garnered discussion in the focus groups and comments in the surveys.

As Mrs. Silver of School 3 explains, "the kids that are watching, you know, they are tough critics," and this statement was easily confirmed with the students' comments in the survey and focus groups. Although Students in School 1 assumed a very familiar and candid approach to their focus group and seemed to hold little back in the way of constructive feedback (even unprompted for such responses), the surveys of School 2 and School 3 students revealed more features they didn't like than they reported in their respective focus groups, including comments on such components as the acting, sound effects (a hummed version of the Harry

Potter theme song was especially polarizing in School 2), as well as length and image quality. Students attended to and remembered very clearly what they considered unfavorable aspects of their peers' performances, such as stuffed-up sounding or breathy voices, "mess-ups," and narrations in voices that were too loud or too soft.

Despite the honest critiques of peers, students from all three schools reported that they liked seeing their friends and hearing their friends' voices, and this connection drew their attention. A School 1 student responded thus to the survey question about what made her pay attention: "Yes. [When] I heard my [friend's] voice when [her] digital story came up." A School 2 student explained in the focus group that the digital book trailers were "like movie trailers, but like watching a movie, with an actor, that was like your friend."

Personal relevance was important; as one School 3 student recalled, "it seemed like they were talking to me." Other attention-getters among the students were pictures and images (especially at School 1), funny parts, action sequences (especially at School 2), and at School 3, students reported paying attention to the authority of their classmates in the video, in a way, fact-checking the content of the project about the Green Team.

Some of the same qualities that appealed to students when they viewed completed stories were apparent when they made the stories, which is a logical connection. For example, "what they feel" and "what makes them pay attention" both encompass aspects of personal relevance and interest in and reactions to seeing themselves. Students devoted time to making themselves a noticeable part of the videos, even when the stories weren't necessarily about them. School 2 students included credits with their names, which seemed to take on more of a priority than citations of images and information, as well as photos of the author-creators, and at both Schools 2 and 3, students included "bloopers," or outtakes of mistakes in their acting and narration.

At School 3, Anthony, Regan, and Abby acted out the credits, introducing themselves and saying “thanks for watching the podcast,” at which point two students watching the video performance lifted up their heads from their desks, where they were leaning. Then the outtakes appeared, and students watching the video smiled, laughed, looked at each other, and shifted in their seats after being fairly still.

Bloopers became somewhat of an epidemic at School 2, with some students including actual outtakes of mistakes in recording, and then students started recording “fake bloopers,” in which they would intentionally do something silly or flub the script. In survey questions about what they would change about the stories and what they liked and didn’t really like, some students reacted positively to the bloopers, expressing that they were funny and that they wished they had added bloopers to their stories, but other students critiqued the authenticity of the bloopers, noting “less bloopers, more trailer” and “too many bloopers (the lightning thief) they weren't real so I didn't feel any funny part in it.”

4.1.6.2 Actions

As described previously, intermediate and middle school students exhibited kinesthetic watching and listening behaviors during project development. Movements were more subtle at some schools during the performances of digital storytelling, but students did show a variety of physical forms of response. In School 1 (Ancient China Photo Story), students were seated in chairs (without wheels), and when they moved, they moved mostly their feet or upper bodies (tapping or shaking feet, nodding or moving heads side-to-side or looking around). At School 2 (iMovie book trailers), the students were gathered around the computer screens, and the most observable actions were (as stories started), jostling to see the screen, followed by bouncing or tapping, dancing, talking, looking around or at certain people, and in some cases, touching the

computer keyboard. At School 3 (iMovie team podcast), students were seated in chairs at their desks, and the most apparent actions were alternating between leaning on the desks and sitting back in the chairs, occasional looking around (left and right or behind them), and soft talking.

Some students expressed some frustration or reaction to sitting still for the performances. Asked on the survey about what they wanted to do next after watching the stories, one School 2 student (grade 4 or 5) said, "Play outside. I was feeling energetic!" A student at School 1 justified a preference for a fast-paced story with the explanation that "[I] really [don't] like to sit down and stay still."

Students' shifts in posture were another type of observable behavior. Typical stances for viewing varied in each room and across the three settings, as each had different seating and viewing arrangements for the students. I noticed students' eye contact with the screen, sometimes brief and interrupted by looking away at classmates, teachers, or around the room and sometimes in long periods of gaze. Other observable student behaviors during the performances included laughter, sighing or deep breaths, talking to classmates, smiling, turning around in chairs (for Schools 1 and 3, where students sat in chairs for the performances), clapping, and yawning. The full list of types of recorded behaviors is in Appendix C. In some instances, what the students were responding to was easily discernible, such as music, narrated phrases, or acting by students in the piece. Other responses, particularly facial expressions, sometimes reflected students' reactions to viewing their own work, a connection I could make as a result of my time spent in the classrooms during the project development. During their own stories, some behaviors included smiling, looking up at the ceiling, looking around the room, and talking.

4.1.6.3 Emotions

Students and teachers provided information in the interviews and surveys that help to illuminate what they were feeling while they viewed and listened to the performances. Students and teachers specifically pointed out a type of response likely not attainable through traditional, face-to-face storytelling: students' reactions to viewing their own digital storytelling. In live storytelling, the teller does not have the opportunity to experience the storytelling in the same way as the audience, due to his or her role as the teller. However in digital storytelling, apart from the insight inherent to viewing something students themselves made, author-creators experienced the performances of digital storytelling in basically the same way as the rest of the audience.

Students expressed a range of emotions, including embarrassment, shyness, and pride. Some students wrote that their own was their favorite on the survey, which wasn't actually an option I had thought about in designing the survey, and some students asked me directly if it was ok "to say mine was my favorite." In this survey question at School 1, two students responded "mine" and one student wrote (uncorrected for conventions), "i liked my storyteller my story teller was on confucius i liked my storyteller because my music matched with my story....." indicating an element that she appreciated – the music and how it went with the story – and also bringing to mind with the phrase "my storyteller" the previous discussion about student terminology and how they understand and talk about digital storytelling. On the survey question about how their favorite stories made them feel, a School 1 student wrote, in all capital letters, "YES IT MADE ME PROUD OF MY WORK."

At School 2, a student explained in the survey that his or her favorite was "mine because I made it" and a different student described that her favorite part of her favorite story was

specific effect in her story, an animated, customized globe. With just three students as the author-creators of the Green Team Podcast at School 3, fewer responses dealt with a student's own story as her or her favorite, though some students noticed when they appeared in scenes in the video (not corrected for conventions): "I was thinking when i seen my self 'Theres me!!!!!!!!!'"

The personal relevance factor in a story about the students' middle school team, also connected to what draws students attention, generated some emotional response related to the students' feelings of being part of the Green Team. For example, of the nineteen responses to the survey question about whether their favorite story (in this case, the only story) made them feel any particular way, nine students wrote responses that describing feeling happy, good, lucky, or excited to be on the Green Team, including, "made me feel good I was in such a supportive team" and "it made me excited for the Green Team even though I'm already on it." Eight responses showed that watching the video made them feel nothing in particular, or the same.

In the focus group interview, School 3 seventh grader and team podcast creator-author Regan explains how it feels to watch one of her videos, revealing in her comment some perspective as a student who makes many podcasts, or digital stories:

> Regan: It's kind of cool, cause if it's a good one, you're like - yeah. That's my video. But if it's a bad one, you're just like, oh god. Here we go.

Students' feelings in the experience of digital storytelling were described by their teachers, such as this comment from Mrs. Silver at School 3 about a mix of pride and embarrassment among her students:

> Mrs. Silver: Yeah, the kids watching their own - they get a little embarassed. (laughs). I mean, they're excited, they want everybody to see it, but they get a little embarassed, but at the same time, they're so proud of what they've done.

According to Mrs. Pearl at School 1, the shyness in watching digital storytelling is typical of her sixth graders:

> Mrs. Pearl: I think they were, sometimes, a little shy when it came up, and they giggled and kind of hide their faces, but I think that's not uncommon for this age group.

Some students directly addressed feelings of embarrassment; for example, one School 1 student explained that what she wanted to do next after watching digital storytelling was "[disappear] mine was the MOST giggled at."

4.1.6.4 Learning

After viewing the digital stories, students remembered facts from their classmates' stories and their own work, and they recalled and described these mostly at a level of learning that could be described as knowledge or comprehension on Bloom's taxonomy, such as correct finger placement for using chopsticks, their animal sign on the Chinese zodiac, and facts about the polio vaccine, which were actually part of a digital story that students in School 3 watched outside of the research study.[153]

In addition to this fact-based learning reported by the students (though, to be clear, not evaluated formally in this study), the students also self-reported and I observed application of skills in technology that reflect higher levels of Bloom's taxonomy, such as application and analysis. For the students in School 1 and School 2, all of the Photo Story and iMovie development was new, so students learned each component of the digital storytelling production

process. They practiced and applied skills to navigate the interface, import images, sequence frames, add text, and record narration, as well as a variety of other skills in applying transitions and effects, depending on which software application they used and which features the students incorporated. They analyzed content independent of any teacher instruction, as in the critical stance portrayed by the "fact checkers" in the Green Team podcast performance.

In my initial development of the conceptual model, I included the phrase "what they got out of it" to address those outcomes outside of instructional objectives (related to content and technology skill development), and teachers and students shared responses that helped me to understand this part of digital storytelling in the classroom and library. For example, students also gained enjoyment and relaxation from watching digital storytelling. Mrs. Pearl at School 1 described that an opportunity to "do something on the computer that people would appreciate" was an intangible outcome that she hoped students would gain. Ms. Copper and Mrs. Silver explained how students feel a sense of belonging to a group in their podcasting efforts. Ms. Copper traced a student's social growth back to his valued role as a technology expert in a podcasting group, and Mrs. Silver shared her observation that students step out of typical roles as leaders and followers to honor skill sets and share the work.

4.1.6.5 Similar Experiences

The focus group questions on what experiences students think are similar to digital storytelling elicited some intriguing responses, such as this one from Trey, Louis and Brian at School 1:

> Researcher: Can you think of an experience that's similar to watching a digital story?
>
> Trey: Yes. Doing it in real life.
>
> Researcher: Ok. Doing what in real life?

Louis: Or doing it in a book.

Trey: Reading that thing, or watching.

Researcher: What were you going to say, Brian?

Brian: Or, in a book. Like writing. Doing it.

These students recognize, as participants in digital storytelling, that there is a blending of media, modalities and literacies, even if these activities are not named as such. Students also compared the voice narration part of digital storytelling to games they play on the videogame system, Xbox Live and the handheld game system, Nintendo DS, experiences which they may have tapped into when recording their scripts. As some students' use (or misuse) of technology-related terminology indicates, students may notice less about the distinctions in names and attend more to the activity that the technology enables, much in the way that Don Tapscott describe in his book *Grown Up Digital* (McGraw Hill, 2009), quoting MIT epistemology professor Idit Harel:

> "For the kids, it's like using a pencil. Parents don't talk about pencils, they talk about writing. And kids don't talk about technology – they talk about playing, building a Web site, writing a friend, about the rainforest."[154]

At School 2, students likened digital storytelling to watching movie trailers and comedy shows, perhaps the inspiration for their affinity for bloopers, and some students also talked about wanting to try making their own movie trailers in iMovie next time, rather than book trailers. Students crossed and jumped around media forms for inspiration and ideas.

4.1.6.6 Next Steps

After developing and viewing the digital stories, students expressed interest in pursuing more digital storytelling, some with specific ideas for the stories they wanted to tell. Several students at School 1 suggested making autobiographies and Photo Stories about famous people. School 2 students said (in the survey) that watching the stories made them want to read the book (that was shown in the book trailer), read the book again or read a sequel.

For their next digital storytelling projects, some students wanted their school librarians to "make it more advance[d]." or "take it to a new level." Students at all three schools wrote and talked about having more opportunities in general, in different classes and related to different subjects, and suggesting that "our teachers give us assignments more often that we can do a podcast with." Some students even identified past class events suitable for digital storytelling, such as a School 1 student who said in the focus group that "when we had Black History Month . . ., you could, we could have done a PhotoStory on that." The Next Steps section of the model incorporates the current digital storytelling experiences, which shape the experiences to follow.

4.2 RESEARCH QUESTION 2: HOW DO STUDENT LISTENER-VIEWER RESPONSES CHARACTERIZE DIGITAL STORYTELLING AS A CLASSROOM AND SCHOOL LIBRARY ACTIVITY?

The most notable characteristic of classroom and school library digital storytelling is that the students assume two roles: author-creators and listener-viewers, and a significant portion of viewing in this context takes the form of viewing one's own work. This dual responsibility leads to increased opportunities for feedback, sharing, and learning, as evidenced by the works-in-

progress storytelling and peer teaching. Although the social context of the classroom seemingly creates an audience-at-the-ready for storytelling performances, the social context of classroom and library storytelling encompasses a closeness, familiarity, and peer dynamic that can be supportive or scary, or at times, just embarrassing, for students. The emotions and personal relevance that students feel to their work and that of their classmates suggests the need to foster a supportive environment for sharing digital storytelling.

Students and teachers are exploring digital storytelling projects and teaching through lenses, references, and methods that they already know, and this process is described in the following sections, including how students understand digital storytelling in relation to other forms of storytelling, how teachers and librarians instruct and teach digital storytelling in the classroom and school library, factors related to collaboration in digital storytelling, and forms of evaluation in the digital storytelling activities in this study. As in the previous section, 4.1, how teachers, librarians, and student interact and work in the classroom context are described, as this these elements are essential in describing digital storytelling in classroom and school library settings.

4.2.1 Students' Understanding of Storytelling and Digital Storytelling

As demonstrated in the previous section with the anecdote about Brian, Trey, and Louis and their consideration of experiences similar to digital storytelling, students recognize familiar activities in the experience of digital storytelling, and they articulated this evolving understanding in the survey and focus groups. Students provided thorough and specific definitions of "storytelling without the digital part" in the survey, and their responses emphasized concepts of talking, telling, reading, making up a story as a person tells it, and "reading the story to a live audience,"

as described by a School 3 student. One student said that storytelling without the digital part was "boring." Students remembered hearing about storytelling at school, the school library, the public library, at home, at festivals, and at bookstores. Some students associated storytelling (not digital storytelling) with being a young child. For example, students provided the following perspectives on storytelling:

- "When I was little my mom read me [storytells] so she was [storytelling] me." (survey response, seventh grader at School 3)
- "I have heard about storytelling from when I was little and my parents would read to me little stories that would teach me lessons" (survey response, seventh grader at School 3)
- "I have [heard] about story telling in preschool" (survey response, sixth grader, School 1)

Students represented their understanding of the "digital" in digital storytelling with phrases such as the following: on a video, on a recording, on a TV screen, electronic, technology, and one student said that with digital storytelling, "you put it on a big screen and put music behind it." Several students at each school replied "I don't know" or "I'm not sure" when asked what "digital" meant in a digital story.

When asked if they had ever made a digital storytelling project before (at the conclusion of the projects), three students from Schools 1 and 2 (where all students participated in the projects) said no, which reveals another example of students' developing understanding of technology terms, or more importantly, their understanding of terms that their teachers and librarians use.

In considering how digital storytelling and reading a story in a book might be related, some students defined boundaries, as in "digital stories can have music stories can't." Although the

survey question did not ask students to choose one form over the other, several students made some evaluations, such as, "the books have more information and the digital had not that much" and "they both tell a story, but a regular story can explain more things." In contrast, a student at School 1 explained that "they are the same by telling us information about the story the difference is digital can tell us more information."

Attending not to information but to imagination, a seventh grader at School 3 wrote of digital storytelling and stories in books, "they are the same because they talk about one topic. They are different because they give you the images and I don't like that as much as imagining the places myself," a phrase reminiscent of Maguire's belief in the importance of imagination in storytelling.[155]

4.2.2 Teaching and Facilitating Digital Storytelling

The teachers in this study identified numerous reasons for implementing digital storytelling in their classrooms. For Mrs. Pearl at School 1, digital storytelling was selected as a strategy to engage lower academic performing students, as "something on the computer that's not a game and not a PowerPoint," as well as an alternative method to teaching a unit from the textbook. In keeping with this objective, Photo Story was selected by Mrs. Auburn as an application that she described as having less bells and whistles and an emphasis on content.

For Ms. Black at School 2, an intermediate classroom teacher approached her with an idea for a project dealing with novels, and Ms. Black decided to use the Apple programs that she had available for the digital book project. For Mrs. Silver at School 3, the podcast was a means of conveying the student perspective on life on the Green Team.

Factors such as school schedules, class time, class size, technology resources affected the teaching and facilitation of digital storytelling in the school context, and some of these concerns affected the project development and performances. As described, noise and volume issues were a problem at School 1, where schedules were also a concern, as several of the class periods in School 1 were abbreviated to accommodate the state testing period in the month of March. Students at School 3 asked teachers to allow them to continue working past "the bell" to allow them to finish sequences they were editing, and even in School 2, with nine or ten one-hour and ten minute class periods, students still expressed a need at the end of the project for more time to finish and make changes, and as described, many students hadn't yet saved their files as "movies" when the performance day arrived.

The model of presenting digital stories one-by-one as class presentations was represented in Schools 1 and 2, and this was an area for continued consideration for Ms. Black in her plans to implement digital storytelling in the future:

> Ms. Black: I really felt like they could have used better instruction from me in terms of what does it take to be a better listener, and what's the value in that. I'm sorry that I didn't do that more. And of course the issue of respect.

The challenge of developing a performance scenario that fits available time, space, and supervision of students, along with addressing the need to foster a feeling of a safe space for sharing, is one of the most important characteristics of digital storytelling in school and library settings, yet one that is critical, to help students cope with feelings of embarrassment or shyness, or as the previously mentioned School 1 student described, perhaps to prevent having students feel like they want to disappear.

Another unique distinction between traditional storytelling and digital storytelling in the library or classroom setting is that traditional, classroom- or library-situated storytelling is usually presented by adults, either the teachers or librarians themselves, or an invited guest storyteller, to an audience of students, patrons, or other listeners. The nature of digital storytelling in the library or classroom is that the creation of the stories by the students is a major focus, and necessarily, time and instruction are required to develop the stories. The time spent making stories can be considerable, depending on the design of the activity and the teachers' objectives, as well as the complexity of the software application and the students' familiarity with it, and their overall technology and information literacy skills.

4.2.2.1 Teacher Strategies for Supporting Student Skill Development in Technology, Information Literacy, and Literacy Learning

Teachers implemented strategies to help their students learn and practice the technology, information literacy, and literacy skills required to create and view digital stories. Ms. Black, who teaches technology at School 2, used clear directions, simple terminology, and modeling and repetition. When demonstrating a skill, Ms. Black often told the students, "covers down," meaning that students were to cover their monitors with the pink laminated construction paper attached to each one, which minimized distractions from looking at screens while she talked. She checked in on students' progress frequently during large group instruction and during group work time, offering to help again and again. Often, Ms. Black modeled a skill using the teacher computer (and LCD projector) then provided time for guided practice. She incorporated many kid-friendly phrases into the guided practice, such as "let me know if you don't have a right click" (referring to Apple mouses with one button), "you have 10 minutes to be the driver, then pass the mouse" (in giving instructions to take turns), and ".jpgs mean pictures." At the

beginning of iMovie instruction, she introduced features and tasks in small increments, sometimes giving students a countdown (such as 5-4-3-2-1) to complete a step individually before moving on to the demonstration of the next step. She also instructed students to repeat essential steps out loud in choral response, such as "File, Save as. Repeat after me. File, Save as."

Ms. Black attended to the students' affective needs as part of their skill development. For example, as students practiced a step in iMovie, she asked, "Is anyone here upset and needs help?" Ms. Black also encouraged students to help each other, and her students explored various ways of sharing and peer teaching, as previously described.

At the beginning of the Ancient China Photo Story project, Mrs. Auburn demonstrated the steps for each day's work on a demonstration computer (a desktop with the image projected on to the wall). This was a short portion of the class, not usually more than five minutes, and students attended to the demonstration with eye contact and little talking, perhaps because of the novelty of this project for them. After the teaching part, Mrs. Auburn, Mrs. Pearl, and Mrs. Kelly, the paraprofessional, provided one-on-one assistance with script writing, file saving and access, and steps of Photo Story. For this library project, Mrs. Pearl's class rules were in effect, including staying seated, and although students did not have assigned seats, they were seated with an empty computer in between them, or as she called it, "do a computer, skip a computer." Mrs. Pearl helped students to stay organized for this research project by collecting their notes and scripts at the end of each class (so that students couldn't lose them). Mrs. Pearl, Mrs. Auburn, and Ms. Black gave 10-minute, 5-minute, and 2-minute warnings as the end of class approached, accompanied by reminders to save work.

At School 3, I observed fewer direct teaching strategies from Mrs. Silver and Ms. Copper, as their roles involved more facilitation, though the independence, trust, and technology guidance that they provided supported the students' work.

Teachers at School 1 and 2 intervened in off-task behavior, including talking, silliness, and a few instances of mishandling or misusing technology equipment, including this comment by Mrs. Pearl, "can we please keep our face off the keyboard?" and this caution by Ms. Black, "I'm hearing something that does not make me happy," referring to banging on a keyboard from a student who was unable to log into his account. Students at Schools 1 and 2 used user names and passwords to access their folders and files, and on one occasion at School 2, Ms. Black's students received notices to change their passwords, and she spent a few moments explaining how to choose and remember a password.

4.2.2.2 Students' Technology, Information Literacy, and Literacy Skills

Students exhibited a range of strengths and needs in the technology, information literacy, and literacy skills required to use technology resources to create digital stories. Although the Photo Story and iMovie applications were new for many students, the foundation for effective use of these tools comes from such skills as reading, manual dexterity and hand-eye coordination (using the mouse and keyboarding), saving and accessing files, downloading images, navigating computer interfaces (using menus and windows).

Students learned technology through trial-and-error as well as via teacher instruction. For example, when a system-wide problem at School 1 caused all computers to shut down suddenly, most of the students lost everything that they had done that day, as few of them had saved their work. Some students demonstrated more developed skills than their classmates, which could be related to the quality of story produced, and perhaps, the responses that listener-

viewers gave. The librarian at School 3, Ms. Copper, pointed out that the students learn Windows-based computer applications in their technology classes at school, but they were primarily self-taught in their podcasting activities on the Mac laptop: “They’re not afraid to try new things . . . and they're not afraid to go and you know, navigate and figure things out. . . I would have thought that some of them would have been more hesitant, and it wasn't like that at all.”

4.2.3 Collaboration: Teacher and Librarians, Teachers and Teachers

Collaboration was a common quality of the three school projects, though at varied levels. The collaborative process at School 2 (book trailers) took place primarily in the idea generating and planning, in that the classroom teachers and Ms. Black decided to connect the iMovie project in the technology class with novels that the students had read in their language arts class. The teaching process was carried out on an individual basis by Ms. Black.

At School 2, Mrs. Pearl emphasized that her collaboration with Mrs. Auburn, the school librarian, was essential to the project’s planning and implementation. As she explained it, Mrs. Pearl handled the social studies aspects of the project – deciding on the curricular area and the topics that she wanted students to research – and Mrs. Auburn took responsibility for the library resources and technology, which was for Mrs. Pearl an area for which she especially appreciated the support and expertise of her colleague. She describes their collaboration this way, “Find somebody with the strength that you don't have.”

At School 3, Mrs. Silver’s and Ms. Copper’s collaboration was very fluid and open, though it was a relationship that both teachers recognized and appreciated. Here, Mrs. Silver

describes her hopes for continuing the podcasting next school year, and she also acknowledges the support of the school's technology department.

> Mrs. Silver: As long as I have the technology and the help available to me, because my tech guys play a really big role in this, my librarian plays a really big role in this, I couldn't do it without them at all. I mean, the kids do a lot, and honestly, I'm a facilitator. I mean, I really don't do much. I watch, you know, I listen, I encourage, my librarian helps out a lot with resources, and my tech guys are able to work with us whenever there is a problem and there are problems a lot of times that they fix. So as long as we have all those components, I'm going to definitely do it next year.

4.2.4 Evaluation and Self-Evaluation in Classroom and School Library Digital Storytelling

Of the three digital storytelling projects, two were evaluated and graded by the teachers: School 1 (Ancient China Photo Story) and School 2 (digital book trailers). The School 3 project was a voluntary student activity for a small group, facilitated by the teacher and librarian, and as such, the students did not receive a grade. Only Ms. Black's lesson at School 2 incorporated a formal student self-evaluation, but students at all three schools took part in or talked about self-reflection to some extent, in most cases informally, during the development of the projects and upon viewing the completed digital storytelling. As described previously, the students' work-in-progress viewing and editing was largely based upon frequent, quick reviews of their own work, with self-assessments and determinations of content needed and changes and additions to make. Student comments and reactions to viewing their own completed work are examined as part of the previous discussion on engagement and response.

At School 1, Mrs. Pearl evaluated the students on their participation and completion of the digital storytelling projects, and she reported that all fifteen students received an A. In

accordance with the sixth grade social studies curriculum, Mrs. Pearl administered the unit test on Ancient China to assess their understanding of the content. I did not observe any classroom discussion of the grading process or the students' test taking. In my observations of the sixth graders in Mrs. Pearl's class, I didn't observe any instances of Mrs. Pearl instructing students on the grading process, and I noted only one occasion when students mentioned the grade they hoped to earn. In that situation, two female students in the class, Tanya and Kaya, had just recorded the narration of their Photo Story projects. From my field notes, their interaction went as follows:

> Tanya puts on the headphones to watch and listen to the final version of Kaya's Photo Story.
>
> Tanya claps and moves her head while she watches and listens, then wipes her eyes as actual tears drip – but then she explains that "when she stares really long she can make her eyes dry."
>
> When she listens and watches she looks like she is listening to music.
>
> Tanya pats Kaya on the back.
>
> Kaya: I want something that people can watch and not get bored cause we have to watch a lot of them.
>
> Researcher: So what did you do?
>
> Kaya: Funny voices. I'm going for a B!
>
> Tanya: I'm going for an A.
>
> Researcher: What else did you do so people don't get bored?
>
> Kaya: I kept it short.
>
> Tanya: Yeah.
>
> Kaya: It's only like a minute and twelve seconds.

As described in the previous sections on students viewing their works-in-progress and their completed projects, there were occasions when students from School 1 (as well as in the other two schools) considered their listener-viewers and what they might think of their work, and they also expressed evaluative comments of their own work, but grading of the projects was not a dominant focus for the students or one expressed by the teachers. Interestingly, Kaya and Tanya's exchange about grading suggests awareness of how classmates may perceive their work, and unprompted by the teacher or researcher, these students connected the listener-viewer responses and their grades. Although it would be difficult to assess students' work on the response of their peers, this finding might suggest that some form of peer evaluation would be meaningful and helpful to students in classroom and library digital storytelling.

At School 2, Ms. Black used a scoring rubric that she developed via Rubistar (an online rubric development tool) to assess the students' work as groups (one rubric per group project), and her students also completed individual self-evaluations. These documents are included in Appendix B.

Ms. Black explained the scoring rubric to the students, section by section, on the seventh work day of the project. The rubric had eight categories: Editing, Basic Elements, Collaboration and Contribution, Content and Theme, Documentation, Images, Above and Beyond, and Overall. Four levels of descriptors were given for each category, with scores of 4, 3, 2, or 1 possible depending on the level of success in that area. A score of 4 represented the highest level of completion and achievement, and the skills in the 3, 2, and 1 categories listed the same general expectations as a 4, qualified with terms such as "some," "okay," "most," or "partly."

Portions of Ms. Black's explanation of the rubric (recorded via field notes) are as follows:

Ms. Black's rubric is a Rubistar-based rubric. She shows the rubric.

Ms. Black: if you're ever seen a rubric before, raise your hand.

Nearly everyone raises hands.

Ms. Black explains Editing area of the rubric first. She pauses to help a student adjust the height of a chair. She reads from the document.

The second rubric category is Basic Elements. The descriptor for the highest possible points is "Best of All Worlds."

Ms. Black explains that this would be given: If you could do everything right. I don't expect you to.

Third category is Collaboration and Contribution.

Ms. Black: This is the area that I'm most concerned with. You're responsible for everyone in your group, not just yourself.

Fourth Category is Content and Theme. Ms. Black talks about matching the book with appropriate mood/theme:

Ms. Black: A serious theme should not be like a ride at Kennywood [local amusement park].

Ms. Black uses Number the Stars as an example.

Ms. Black talks about relevance to today's world.

Ms. Black: What kind of conflicts exist? Maybe show in your book trailers.

Ms. Black mentioned some examples from ongoing projects to help illustrate the descriptors of the rubric, such as how a light-hearted segment of the book trailer for *The Giver*, in which students recorded themselves popping in and out of the frame, probably did not correspond appropriately with the more serious themes of this book. Ms. Black concluded the discussion with explanation of the categories, Documentation, Images, Above and Beyond, and Overall.

According to the rubric, a score of 4 in "Above and Beyond" could be earned when "parts of the book trailer are unique, demonstrate great effort, and succeed in making the book trailer better." I asked Ms. Black after the lesson if "Above and Beyond" was a school-wide assessment approach or just hers, and she explained that it is something that she does.

Ms. Black's student self-evaluation is included in Appendix B. Students completed the self-evaluations on their last work day of the project, at the beginning of the class period. Students were asked to reflect in a few lines on their contributions to the group project, their efforts in helping group members, what they might do differently if they could do it over again, and what they would like their parents to know about the project. Completed evaluations from some of the students were collected as part of the artifacts for this study, and selections from these evaluations are presented in Figures 15, 16, 17, and 18.

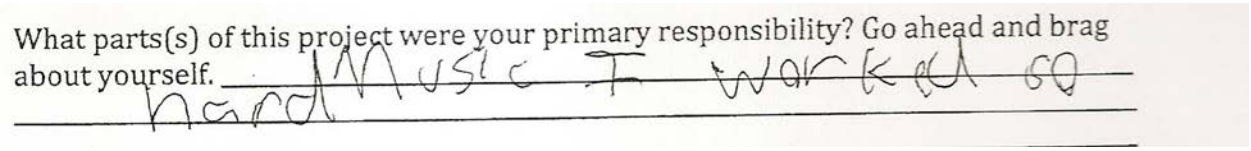
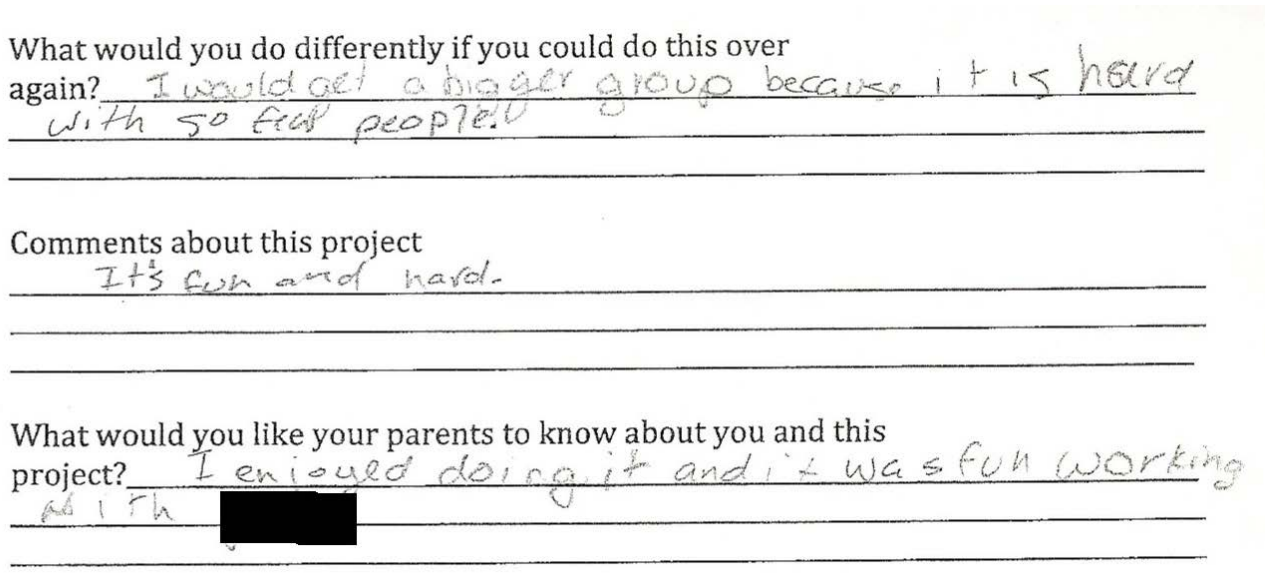


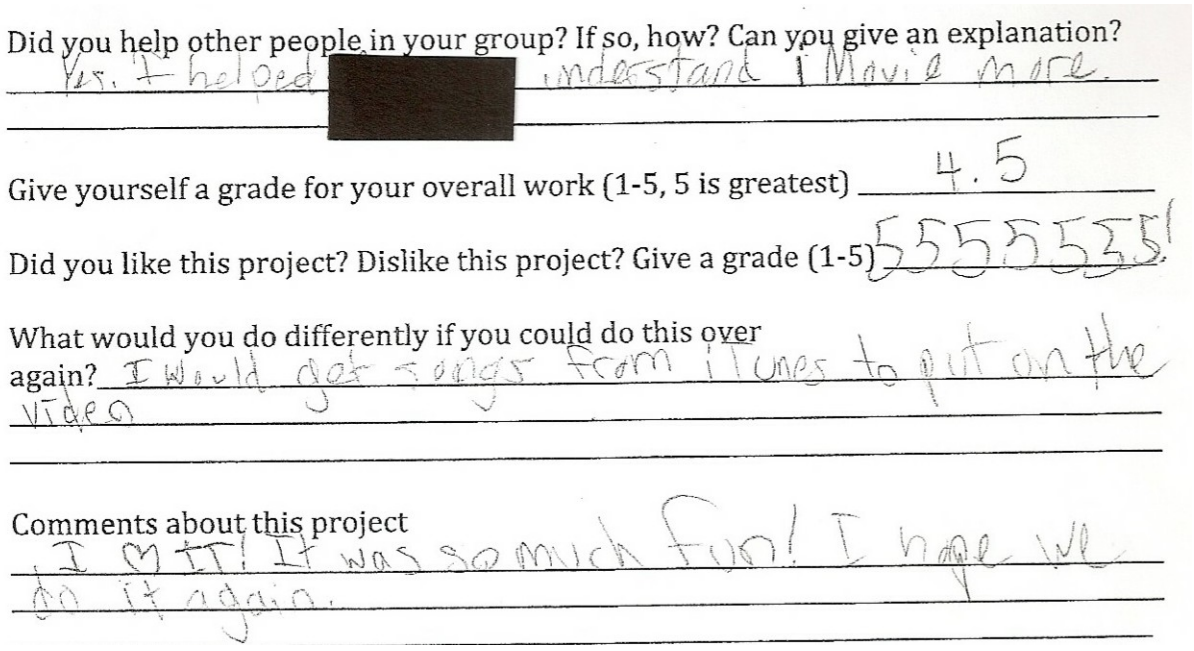
Figure 15. Tommy's self-evaluation of his contributions to his group's digital book trailer: "Music. I worked so hard."


What would you do differently if you could do this over again? I would get a bigger group because it is hard with so few people!

Comments about this project
It's fun and hard.

What would you like your parents to know about you and this project? I enjoyed doing it and it was fun working with [redacted]

Figure 16. Allison's self-evaluations: "I would get a bigger group because it is hard with so few people," "It's fun and hard," and "I enjoyed doing it and it was fun working with [classmate]."


Did you help other people in your group? If so, how? Can you give an explanation?
Yes. I helped [redacted] understand iMovie more.

Give yourself a grade for your overall work (1-5, 5 is greatest) 4.5

Did you like this project? Dislike this project? Give a grade (1-5) 5555555!

What would you do differently if you could do this over again? I would get songs from iTunes to put on the video

Comments about this project
I ♡ IT! It was so much fun! I hope we do it again.

Figure 17. Casey's self-evaluations: "Yes, I helped [classmate] understand iMovie more," "I would get songs from iTunes to put on the video," and "I [heart] it! It was so much fun! I hope we do it again," along with her number scores of "4.5" and "5555555!"

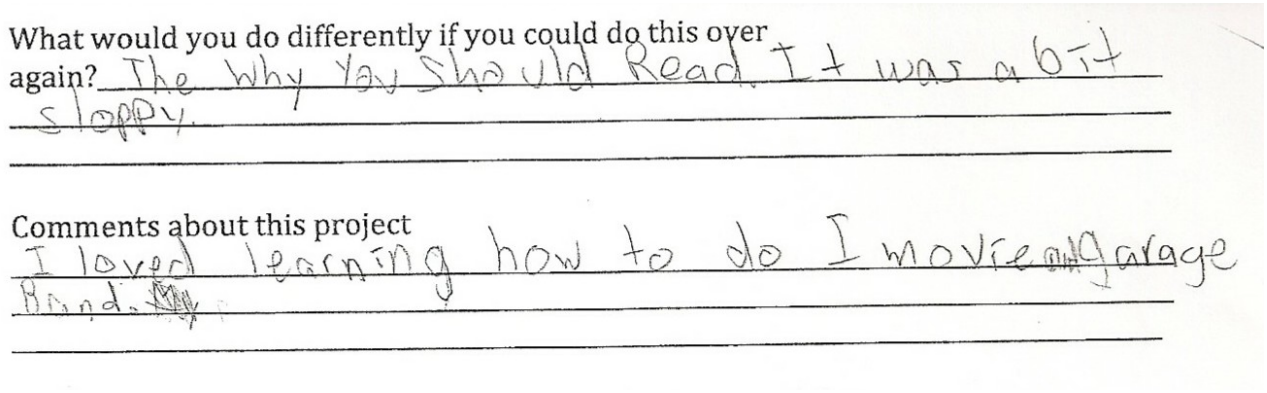


Figure 18. Melissa's self-evaluations: "The why you should read. It was a bit sloppy" and "I loved learning how to do IMovie and garage Band."

In this open-ended evaluation, the students identified aspects of the project that mattered to them, including some of the same listener-viewer dimensions that I hoped to learn about in the study, such as the role of music and students' interest in the process of digital storytelling. (It should be noted that the students did not see the survey questions – which do mention music – until several days after this self-evaluation). With such positive feedback and enjoyment of digital storytelling as reported by the students and teachers across the three schools (as described in the interviews and surveys), it is worth learning about all aspects of the practice to keep strengthening aspects that have appeal, and to build the engagement and enjoyment of parts of the project that were less interesting or in need of improvement.

5.0 CHAPTER FIVE: CONCLUSIONS

5.1 SUMMARY OF FINDINGS

In conclusion, this investigation found six prevalent themes which describe the essence of the listener-viewer response in digital storytelling in the intermediate classroom and middle school library. These themes are Engagement, Action, Emotions, Learning, Similar Experiences, and Next Steps, and the relationships among the themes are suggested in a conceptual model. Further, the findings identify qualities that characterize the listener-viewer response in digital storytelling in these settings, most significantly, that the social context of school and library storytelling and students' dual roles as author-creators and listener-viewers results in works-in-progress (or formative) storytelling, peer teaching, and the need to foster a supportive environment for sharing digital storytelling. Teachers employed strategies for supporting student learning in digital storytelling, including developmentally appropriate technology instruction and classroom management, collaboration, and student self-evaluation tools.

In *Language and Learning in the Digital Age*, Gee and Hayes demonstrate the significant differences between the writing that young people produce online – such as a fan fiction writer's post to her readers – full of abbreviations, emoticons, run-ons and sentence fragments, and selective use of capitalization, versus the staid, formal reading that students encounter in school textbooks.[156] I observed how students produce digital content as they constructed their stories,

and to some extent, I observed the students' approach to writing through their survey responses. Students used phrases such as these to respond to questions, pasted here exactly as they appeared in the survey:

- r3gul@r story r3ading
- digital stories are more personal and telling you like it is!!! :)
- idk
- it was cool.:D

This language – both in how it is written and the information it conveys – represents a small component of students' ease in digital communications. As national studies like those of Kaiser and Pew indicate, and as my time with the students corroborates, even with occasional frustrations and diverse developmental differences in skills, students work, play, listen, question, and learn in a digital world. Digital storytelling is a way of letting kids "speak" in a language that they're still learning, but one that they're comfortable exploring and one that allows them to connect with each other. Whether the digital stories were awesome, annoying, or in-between (as described by the children), the students listened and responded to their peers' stories with attention, kinesthetic engagement, and detailed recollections afterward. With digital storytelling as a current, common learning activity in classrooms and school libraries, this research shows that students "get" this type of storytelling as listener-viewers. Through the findings presented here, I have suggested implications for teaching and facilitating digital storytelling to support students as listener-viewers, as well as several new research directions which can extend the current research.

Heath and Street stress that ethnographic research requires wide, interdisciplinary reading and a "zig zag" style of going back and forth between reviewing literature, spending time in the field, and returning to literature.[157] Although my work did not follow all the tenets of their ethnographic methods, this fluidity certainly characterized my time with the teachers and students and my ongoing, iterative reading and analysis. Attempting to understand my research questions in action, in real life contexts of students, teachers, and technology, required some deconstructing of my questions and observations into many fields of study.

I recognized adolescent development issues, such as peer influence and varied levels of developmental readiness for cooperation and fine motor skills. I saw educational theory and policy in motion, as represented by class size, teacher schedules, technology and resources, and state testing. I observed familiar themes of teaching and learning, including classroom management, diverse student needs, assessment, and collaboration among colleagues. These topics were critical considerations for my investigation, and actually none of them even dealt directly with digital media, school libraries, or storytelling, though these were the areas I entered the study prepared to reference. I found that I returned to this literature and also branched out into related areas, such as communication and into different kinds of ethnography, including digital ethnography, to help me understand what I was seeing and how to study it more deeply.

5.2 INTERPRETATIONS OF CONCLUSIONS BASED ON GUIDING THEORETICAL FRAMEWORKS

5.2.1 Mackey's Kinesthetic Modes of Viewing and Listening

One lens for my analysis regarding the level of engagement of students in this study was Mackey's concept of text tinkering; were the students viewing the digital stories in a playful, superficial mode, or were they attending at a deeper level to the content and story?[158] As presented in Chapter 4, it seems that both kinds of viewing were involved in classroom and library digital storytelling. Play was a part of the project development process, and students experimented and played with recording and playback of sound and images to help guide their editing processes, and they also showed playful as well as more serious attention to the performances of digital stories, sometimes (as it appeared through their body language) alternating back-and-forth in one story.

Mackey explains that "listening reverberates in the cavities of the body," and that "music . . . has a quality which can command our attention in a way that print on a page cannot do."[159] Students in the three schools demonstrated that music in the digital stories captured their attention through their dancing, bouncing, and air guitar playing; through comments about music preferences throughout the surveys and focus groups; and in School 2, through the students' time spent developing and playing with music for their stories.

In *Literacies across Media: Playing the Text*, Mackey suggests that texts that combine modalities, such as pictures and reading or pictures and audio, create a "physicality of the experience" which is inherent in the production of meaning.[160] The range of media that comprise digital stories and the range of modalities that digital stories demand of listener-

viewers reflect this physicality of the experience, demonstrated by the students in this study in their project development as well as during the performances.

5.2.2 Rosenblatt's Transactional Theory

Rosenblatt's transactional theory also provided a basis for interpretation of student engagement with the digital stories, with regard to how they interacted with the stories as "texts," and in particular, whether they viewed the stories in moments of lived experience, representing the aesthetic end of the reading spectrum, or from efferent, informational orientations, attending to the concepts and ideas presented in the story. I believe that listening and viewing digital stories are dynamic processes similar to Rosenblatt's interpretation of reading as a dynamic process. The students' responses in the survey and focus group suggest that both kinds of interaction with the digital story "text" were involved.[161] As in Rosenblatt's "cocktail party phenomenon" – the metaphor for how readers attend to and interact with certain elements of text – the research findings suggest that student listener-viewers showed a transactional approach to digital storytelling, attending to and interacting with certain aspects of the stories. [162]

For example, as presented in the conceptual model of the essence of school and library digital storytelling, stories with personal relevance drew students' attention and inspired emotional responses. One such story was Felicia's story about the Chinese Zodiac (at School 1), in which she used a question and answer format to review each animal of the zodiac and the personality qualities of each sign. During this digital story, the students in the audience demonstrated active engagement through leaning forward, smiling, and talking in response to the Felicia's voice in the video when she asked about birth years and zodiac animals. It appeared that students were enjoying this experience and interacting with the story as a text – waiting to

hear their signs, reacting to the list of personality traits, and in some cases, affirming what they heard. In the focus group, the students described the story as entertaining and they recalled Felicia's loud, clear voice. An approach for future research about transactional experiences with digital storytelling may be to involve students in watching themselves react (on video) to a performance of a digital story, to help inform what it was they were thinking and experiencing as they viewed the "text," or the digital story. The responses could then be coded for aesthetic and efferent viewing.

In terms of efferent viewing, the findings suggest that some students watched with an orientation for learning and information. After they viewed the stories, students recalled varied facts about the subjects of the videos, which may suggest as they watched the performances, they interacted with the text from the efferent end of the continuum. In surveys and focus groups, students shared that they learned that dragons have five toes, that the Ancient Chinese made ice cream from rice and snow, that the Green Team offers tutoring on Tuesdays and Thursdays, and which authors wrote certain books. In an example of applying learning in a new setting, a student recounted in the School 1 focus group that she read a story about the Terra Cotta army in her reading book, and that her classmate Trey could have used that information for his project. The study findings also suggest that in the formative, or work-in-progress viewing of their own stories, students may have assumed an efferent stance. They viewed with a critical eye in the editing mode, which may be considered a form of efferent interaction with the text, "taking away" from the experience that information required to make adjustments and changes in their work. As noted above with regard to aesthetic viewing, it may be possible learn more about efferent interaction with digital story "texts" by involving the listener-viewers in an analysis

process; here, in the editing phase, perhaps a think-aloud protocol would be effective in learning more about how the student is interacting with the digital story text.

In what may represent an efferent response specific to digital storytelling, students also viewed their peers' stories with an orientation toward the media itself, expressing curiosity about technical aspects of the presentation. For example, they reacted to certain effects with attention and engagement, and reported later that they wanted to learn how to do something (such as make a watercolor effect or add music) for the next time they made a digital story. This attention to the technique and "how-to" of classroom and library digital storytelling might be unique among storytelling practices. Unless an audience member at a stage or library storytelling event happened to be a storyteller himself or herself, or maybe possessed a natural curiosity for the practice, it is probably not a common response to wonder how a storyteller "did something" during the process of viewing the performance. Watching and interacting with the digital story with a curiosity about specific techniques – as the students brought up in all three schools – may be a characteristic that distinguishes school digital storytelling from other forms of storytelling.

5.2.3 Sturm's Storylistening Trance

I found that my initial "look-for's" for gauging a state of trance – eye contact, posture, facial expressions – were perhaps better suited for confirming what the students reported as those features which made them pay attention to the stories. Attention and trance are not the same state of consciousness, and as I realized upon the first few digital storytelling performances at School 1, it is challenging to distinguish between students who might be experiencing some trance, as in a state of high engagement, and students who stared deeply but were actually experiencing boredom.

Nonetheless, several aspects of Sturm's storylistening theory were represented in some way, and with the findings of this study uncovering more about how listener-viewer response works in the classroom and school library context, perhaps more of these elements can be the subject of more focused investigation. For example, without prompting, several students in School 1 made comments in the survey about "imagining myself there" and "being there" in the Ancient China Photo Stories, responses that relate to Sturm's characteristics of placeness and realism.[163] Students also reported emotional responses, such as happiness and concern, a level of engagement which corresponds to Sturm's trance characteristic of engaged emotional channels.[164]

Sturm describes the skill of the storyteller as one influence on the storylistening trance, and this is another potentially applicable area for student digital storytelling. As described in Chapter 4, students demonstrated ranges of abilities in using technology to make stories, and the resulting digital stories may reflect that same range in skill. Listener-viewers may engage more deeply in stories that reflect a higher quality of production, but as the findings here also show, students attended to less effective uses of the technology, too.

As Green, Brock and Kaufman contend in their writing on transportation theory, a potential consequence of enjoyment – which itself is an outcome of transportation into story worlds – is that individuals may seek out additional, similar experiences.[165] This is also a potential benefit of classroom and school library digital storytelling: students may seek out other experiences in producing and consuming digital media, which supports their information literacy and technology skills.

5.2.4 Georges' Storytelling as Event and Maguire's Sounds and Sensibilities

As demonstrated in the three classroom settings, digital storytelling can become a shared event, like Georges' characterization of traditional face-to-face storytelling,[166] though dynamic, live interaction takes on different forms in digital storytelling, and the interaction happens during parts of the storytelling process beyond the finished performance of the story. Georges' assertion that storytelling is a social, communicative experience held true in varying degrees at the three schools. Although the arrangement of the performance spaces and teacher expectations for behavior potentially influenced what social behaviors students exhibited, social context was a central component of the storytelling event.

Teachers and students even revealed some ways of making digital storytelling more like traditional, face-to-face storytelling. In the project development phase, for example, students showed pieces of the stories to classmates and requested feedback, such as the students "worried" about Garage Band soundtracks at School 2 and Nina, who made Brian listen and watch her whole Photo Story at School 1, despite his protests that it would take too long.

The spaces, gaps, and imperfections that Maguire values in rough-hewn, live storytelling were more evident than I anticipated in the finished digital stories, especially in portions of digital stories narrated or acted out by students, and as an audience, the students reacted to classmates' (and their own) pauses, stumbles, and "mess-ups" (as the student called them) much in the way that an audience might for a live teller – with giggles, looks around the room, and perhaps, with imaginative forays into the mind's eye, which Maguire emphasizes is one of the benefits of storytelling.[167]

5.3 IMPLICATIONS FOR TEACHING AND FACILITATING DIGITAL STORYTELLING

There are numerous findings of this study of benefit to teachers and librarians who wish to facilitate digital storytelling with their students. Placing digital storytelling in the classroom context, with eyes open to the possibilities and strengths of traditional storytelling, affords some challenges and great opportunities. As teachers and librarians encounter and try out new approaches to teaching and learning and integrate new resources into their classrooms and libraries, student learning remains the central objective. The teachers and librarians in this study explained that they utilized digital storytelling to strengthen learning, not just because it is an exciting tool, and through the findings of this study, I have suggested here some additional ways to continue and expand effective use of digital storytelling with students.

There are cultural patterns to learning, teaching, and functioning in a school environment, and one of these is the common model of concluding a project with a sharing or reporting out day. Teachers get to see completed projects, and students get to share what they did and see the work of their peers, as well as practice speaking in front of a group. I observed this model in all three schools, possibly even as an outcome of my interest in watching the students' reactions to digital storytelling, but I have also observed and facilitated this scenario in many other classrooms.

Digital storytelling can also happen in this manner of "stand up and present, next student, next project, next team," – but, in assessing this approach with traditional storytelling as a model, it can be argued that there is a lack of sharing between teller and audience. In face-to-face storytelling, the exchange and feedback between the teller and the audience happens at the performance. The possibilities for this interaction are changed – though not eliminated – with

digital storytelling, so one way to compensate for the changed dynamic is to redistribute and balance out the sharing so that it happens throughout the time that students are making their stories, not just at the end. Students in all three settings did this naturally through peer sharing, and teachers and librarians can enhance and support this practice by suggesting that students share their work throughout the project, if that style suits the students' needs and preferences.

Student responses indicate that in addition to any content knowledge or story experience that they might enjoy or attend to in a digital story, they also want to know about the process of making the story, which was something not represented in studies of listeners in traditional storytelling. Librarians and teachers can take advantage of this curiosity and the power of peers to support skill development in the classroom, perhaps via peer teaching.

5.4 LESSONS LEARNED IN CONDUCTING THE STUDY

There are numerous "lessons learned" from conducting this exploratory research study of classroom and school library digital storytelling. These lessons will inform the studies that follow this investigation. First, as described previously, there was not an existing coding system to implement in this study, so as the researcher, I developed codes to use in analyzing the data. Intercoder reliability, in which "'blind review coders . . . apply the definitions to data to check for consistency in meanings and application," could be implemented in future studies to ensure that the codes accurately reflect the events being described, and that consistent coding is being applied.[168] Additional research and exploration can be conducted with regard to the specificity and functionality of the codes used to describe classroom and school library digital storytelling.

The importance of the "self" as a viewer of digital storytelling was not anticipated going into this study, and this is both one of the most intriguing findings of the study and a lesson to shape future studies, including the methods employed to study digital storytelling. As described previously, one way to learn about "the self" as viewer may be to include students in the analysis of their efferent and aesthetic responses to digital storytelling. Other approaches may be to include focus group or survey questions relating to the self as viewer, and to develop more well-defined data codes about the self as viewer for analysis of data

As an exploratory study of ongoing classroom activities, replication of this study may be challenging, first in terms of the classroom activities and the students taking part, and second, with regard to the technology involved in the lessons. The classroom teachers and librarians in this study were selected in part because of their plans to incorporate digital storytelling in the 2010-2011 school year. To study additional digital storytelling activities with these librarians and teachers in an upcoming school year may mean that different students would be involved, or that the subject areas, genres of digital storytelling, or technology resources might not be the same. With regard to technology, the school computers and the digital storytelling software may have undergone updates or changes, which could create variation in the activities as designed by the teachers and librarians.

Another lesson learned in this study regards the survey instrument. Due to the availability of computers for these activities, I decided to have the students complete the survey using the online survey tool, Survey Monkey. At two of the schools, Schools 1 and 3, the students seemed interested in the novelty of this survey tool and they completed the questions with little observable frustration or difficulty. At School 2, however, which was the setting with the youngest children in the study (ages 9-11), the students' keyboarding skills seemed to slow

down their progress and create some difficulty for them. In future studies, I will consider the keyboarding skills of the students as a factor in implementing any written response instrument, and use a traditional, paper-and-pencil format as needed.

Another survey component to adjust for next time pertains to students' activities during the school week versus over the weekend. Many students wrote-in large spans of variation in their time spent playing video games or using the computer, and this data would likely be better understood and more effectively analyzed if the questions separated weekday and weekend habits.

5.5 NEXT RESEARCH DIRECTIONS

5.5.1 Topics for Further Investigation

The findings of this study open up numerous topics for further investigation, which is a fruitful outcome of research intended to characterize digital storytelling in classrooms and school libraries. In other words, figuring out what this practice is and how it works in classroom and library environments supports the articulation of rich questions for new study. Some of these new areas of inquiry relate to the listener-viewer focus of the current study, and some research directions relate to the development of digital storytelling, as influenced by my observations of the students at work in making their stories.

5.5.1.1 Group Dynamics in K-12 Digital Storytelling

Upon studying the students' collaboration to create digital storytelling projects at School 2 (digital book trailers) and School 3 (team podcast), it is clear that group dynamics are a significant component of classroom and library-based digital storytelling. Sometimes, as in the School 3 team podcast group, the three students were familiar with one another's areas of skill, they edited and filmed in a fluid, productive way, and they supported one another's creative process by honoring ideas and helping implement them. In other situations, such as the group of five students creating the *Number the Stars* digital book trailer at School 2, the number of students in the group seemed to pose problems in terms of time on task; tension about who got to do "fun tasks," e.g., working with music in Garage Band, and who got "stuck" with more boring or laborious tasks, such as creating a citations page. Thus, a topic of potential future study is how children work collaboratively in partners, and in groups of varying sizes – three, four, or other numbers, to construct and view digital storytelling projects.

From my observations, some possible characteristics to explore are the identification of tasks to complete and the assigning of responsibility for working on the story components (according to students' needs assessment or the teachers', or a combination thereof); how students go about their research or information gathering approaches and how that process fits in with the story development (simultaneous, separate, in what sequence); leaders, followers, and other roles in groups and how these roles develop; how collaboration affects the creative process; how students view and assess their works-in-progress and how they might fulfill roles of teller and audience for each other in this process; and how the number of students in the group influences the group's ability to work together.

Studying the group process in developing digital storytelling in classrooms and school libraries could be an appropriate investigation for collaboration with researchers in education or sociology of education. Another angle of this line of inquiry is studying how students work as they develop individual digital stories, including how (or whether) they seek out peers to preview or provide feedback. Learning how students work can support the identification of productive strategies to meet students' preferences and help them to create good digital storytelling products.

Peer teaching in digital storytelling seems a rich area for more studies. There is power in knowledge, and students who had knowledge of tools and tricks in iMovie and Garage Band were sought after by their classmates for advice and instructions, and these students were also identified by the teachers as go-to people for help and assistance. As such, the role of peer teaching in digital storytelling may be examined further, as well as students' habits and preferences for teacher-led instruction, peer teaching, learning by observing peers, and self-teaching and learning. Peer evaluation or feedback may also bring interesting dimensions into classroom and library digital storytelling, as well as studies of self-assessment. Applying Goldman-Segall's "hedgehogs and foxes" interpretation of students' work in technology projects may be a useful approach to studying peer teaching and peer sharing in digital storytelling.[169]

5.5.1.2 Taking Digital Storytelling Outside the Classroom

Although much of this work focuses on digital storytelling in the classroom and library, portability and sharing outside of class were still brought up interviews, mostly by the teachers. The librarian at School 3 emphasized sharing with friends and family outside of school as a positive aspect of digital storytelling and she mentioned burning CDs for students to take home from a digital storytelling project with another class. Ms. Black's self-evaluation at School 2

asked students to share what they wanted their parents to know about their experience with iMovie.

Although Regan from School 3 explained that she has shown her podcasts to her parents, she also noted that she does not show them to friends outside of school, even though the videos are posted to Youtube on Mrs. Silver's class channel. Sharing of media files is certainly an accessible and available option, and as such, digital storytelling can be a way to share stories with people outside the classroom. How to share and with whom to share, including how to deal with privacy, are topics for further study.

5.5.1.3 Additional Areas for Future Study of Digital Storytelling in Classrooms and School Libraries

Noted above were aspects of social and peer relationships in developing digital stories, and how these relationships affect viewing is also worthy of study. What contexts and groupings of students and teachers support students' confidence and comfort in sharing their work? How can teachers and librarians help reluctant presenters, support sharing, and create safe environments for students?

Another area of need is the identification and study of genres of digital storytelling, such as subject area-based (social studies, language arts), personal narrative, and fictional (folk tales, literary tales, retellings of familiar stories) and how varied genres influence the response of listener-viewers. As described in the limitations, motivations for some of the student behaviors during the performances are a challenge to understand, as crossed arms or sighs might seem to indicate boredom, but it is not reliable to make such assumptions. In future research designs, one way to investigate physical response more deeply may be to involve the participants in viewing the video, and invite them to reflect on what they were doing.

Relationships between author-creators and listener-viewers can be examined further, as to how creator-authors consider their listener-viewers, and potentially, how, if given the opportunity, author-creators might change or adapt stories after performances, according to listener-viewer responses. Author-creator intentions would also make an interesting study; for example, when the students made fake outtakes at School 2, was their intention to entertain their classmates, or to make something for themselves to watch?

In the intermediate and middle school context, an important area for continued study is the learning outcomes of listener-viewers. It was not part of this study to analyze the students in Mrs. Pearl's class on how they performed on a textbook-based test after viewing their classmates Photo Story projects (and not learning directly from the textbook), but I am curious about this connection and how learning is or is not supported through viewing student-created digital stories. Extending this study beyond the intermediate and middle school grade levels into studies with students in primary or high school grades would be valuable for investigating the current questions about listener-viewer response, as well as the other topics addressed in this section. The developmental needs and academic skills of students across grade levels may reveal different aspects of the listener-viewer experience in digital storytelling. Another possible direction for new research is taking the study out of the school library setting and into the public library to learn about listener-viewers in digital storytelling in that context.

In this study, two types of digital storytelling applications were used, but there are dozens of applications for digital storytelling. How different applications suit the classroom and library setting and how students respond to different applications can be explored. The structure of classroom and library digital storytelling - tightly structured or more flexible, with teacher

guidance and instruction (like Schools 1 and 2) or with teacher facilitation and independent student work (like School 3) – is an area that may also relate to listener-response.

5.5.2 Digital Storytelling in a Broader Research Context

Digital storytelling is one example – albeit, with many iterations – of a multimedia, multi-modal learning, information, and storytelling activity for children, tweens, and teens. The current study examines how one aspect of digital storytelling – the listener-viewer response – operates in the classroom and school library setting. Focused investigations like this one of multimodal and multimedia learning strategies will inform effective implementation of guiding curriculum and standards documents, such as the *Standards for the 21st-Century Learner*. In all of the schools that I visited, technology was available and at varied levels of readiness and skill, teachers and students were willing to teach and learn with the technology. Continued research in digital storytelling, gaming, and other new media will support meaningful application of technology in learning, the results of which equip students to use information creatively, independently, and ethically, now and in the diverse contexts in which they will interact, communicate, work, and play.

APPENDIX A: SURVEY INSTRUMENTS

A.1 STUDENT SURVEY

Questions for Student Written Survey:
Please answer the following questions about you. This part also asks a few questions about using computers and a few on storytelling. It's ok if digital storytelling is new to you.

A. Demographic and Background Information

1. How old are you?
2. Are you male or female?
3. Where have you seen or heard about storytelling?
4. Have you heard of digital storytelling before? Where?
5. What do you think the "digital" in digital storytelling means?
6. For you, what is "storytelling" without the "digital" part?
7. Have you ever made a digital storytelling project or a digital story? Where?
8. Have you ever watched someone else's digital story or digital storytelling project? Where?
9. Do you (or your family) have a computer at home?
10. About how much time per day do you use the computer at home?
11. What kind of activities do you do on the computer at home?

    (provide examples as prompts: instant messaging, finding facts for school, checking assignments from my teacher, finding information for myself, watching Youtube, listening to

music, watching TV shows, blogging, talking to my friends, emailing, Skyping, Facebooking, making artwork, gaming, uploading pictures, looking for pictures, reading news)

12. Do you have a video game system or handheld video game player?
13. Do you think of yourself as a "gamer" (or "video gamer")?
14. About how much time do you spend playing video games per day?
15. Did you play a video game yesterday?

B. After Listening to/Viewing Digital Storytelling

Answer these questions about the digital stories that you just watched. Some questions are multiple choice and some questions ask you to write what you want to say. For a few questions, "does not apply" is a choice. Pick this answer if the question or possible choices for answering don't seem to match what you saw. For example, if the question asks about the sound in a story and the story you're thinking of didn't have sound in it, choose "does not apply."

1. Think of a favorite story of the ones you just viewed. What did you like about it and why?
2. In your FAVORITE digital story, how much did you like the . . .

   Story

   Music

   Other sounds (not music)

   Images (photos or illustrations)

   Narration (voice-over)

   Text (words) on the screen

   Design elements (transitions, fading, colors, special effects)

   (Responses: I don't remember it - I didn't like it at all – it was ok – I liked it - I liked it a lot – does not apply)

3. In your FAVORITE digital story, what do you remember about these things? For example, for "story," you might say, "it was about a girl who wanted to try out for a team." For images, you might say, "there were photos and a few drawings."

   Story

   Music

   Other sounds (not music)

   Images

   Narration (student voice-over)

   Text (words) on the screen

   Design elements (transitions, fading, colors, special effects)

   (Response choices: open response or "I don't remember this part")
4. These are some other things I liked about my favorite story and other good stories:
5. Thinking about your FAVORITE digital story, did the digital story make you feel any particular way?
6. Thinking about your FAVORITE digital story, were you doing anything (in your mind) while listening to the story?
7. Did you notice anything going on around you in the room while you were viewing the stories? What did you notice?
8. What is something that you learned in one of the digital stories? What helps you remember this?
9. When you view a digital story, what pace or speed do you prefer, and why? (For example, do you like a fast-paced story or a story that moves more slowly, and why?)

10. When telling a story like this, through images, sounds, and words, put in order how important these things are in telling a story.

    (1 = most important)

    Story

    Music

    Other sounds (not music)

    Narration or student voice-over

    Words on the screen

    Images, graphics, or pictures

    Design elements (transitions, fading in and out, colors, special effects)

11. Thinking about the story that wasn't your favorite, why do you think it wasn't a favorite?

12. In viewing someone else's story, I didn't really like when the story had . . .

13. For a story that wasn't one of your favorites , do you think this was because

    (Check as many as you want)

    It was too hard for me to understand

    It wasn't told in an interesting way or it was boring

    I wasn't interested in the topic or I didn't like the topic

    It had too much stuff: images, music, special effects

    It didn't have enough stuff: images, music, special effects

    I didn't like the images

    Some other reason: write what you think here

14. Did you feel like you were concentrating really hard as you watched any particular story?

    What do you think made you want to pay attention?

15. If you could change something about any of the stories, what would you change?
16. If you could change something about any of the digital stories, would you change any of these elements? How?

    Prompts:

    Music–change it, add it, take it away

    Pace–faster/slower

    Pictures or images-fewer, more, bigger, smaller, use other pictures instead

    Change this about the story that was told:

    Change something else:
17. After you watched the stories, what did you want to do next?
18. After you watched the stories, did you want to do any of these things?

    Prompts: Watch another digital story, make my own digital story, learn about this topic: _____, talk to _____, ask someone about _____do something else,
19. What would you like your librarian to do next with digital storytelling in your school library?
20. Think about the digital stories you just viewed, and think about stories you read in books. How do digital stories and stories in books compare? (In other words, how are they the same or different?)

A.2 STUDENT SURVEY MAPPED TO THEORETICAL FRAMEWORK

Selected Questions from Student Survey, Mapped to Theory

B. After Listening to/Viewing Digital Storytelling

1. Think of a favorite story of the ones you just viewed. What did you like about it and why?

2. **In your FAVORITE digital story, how much did you like the . . .**

   Story

   Music

   Other sounds (not music)

   Images (photos or illustrations)

   Narration (voice-over)

   Text (words) on the screen

   Design elements (transitions, fading, colors, special effects)

   (Responses: I don't remember it - I didn't like it at all – it was ok – I liked it - I liked it a lot – does not apply)

   Music has the capacity to grab the attention and stick in the mind[170]; as such, the factors of whether there is music in the story or not, what type of music is selected, and if the music is familiar, may affect the students' engagement and also how readily they recall a story.

3. **In your FAVORITE digital story, what do you remember about these things? For example, for "story," you might say, "it was about a girl who wanted to try out for a team." For images, you might say, "there were photos and a few drawings."**

   Story

   Music

   Other sounds (not music)

   Images

   Narration (student voice-over)

   Text (words) on the screen

   Design elements (transitions, fading, colors, special effects)

   (Response choices: open response or "I don't remember this part")

   This question may reveal connections to students' engagement; they may be more engaged with stories they liked, so that finding out the qualities of favored stories may be helpful. As in the next question, this topic also may address the students' ability to follow the story (if a story they can follow is one that they like). This topic also connects to aspects of experiential meaning-making, that is, how much thinking and recontextualizing[171] is required to follow the events.

4. These are some other things I liked about my favorite story and other good stories:

5. **Thinking about your FAVORITE digital story, did the digital story make you feel any particular way?**

This question reflects Sturm's findings that storylistening trance experiences include engaged receptive channels, including an emotional response.[172]

6. **Thinking about your FAVORITE digital story, were you doing anything (in your mind) while listening to the story?**

   This may provide insight as to the attention of the student and factors of distraction, which is an effect described by Sturm.[173]

7. **Did you notice anything going on around you in the room while you were viewing the stories? What did you notice?**

   This question also addresses the factor of attention and possibly may reveal characteristics of digital storytelling engagement

8. **What is something that you learned in one of the digital stories? What helps you remember this?**

   This question may shed light on whether students approached the story from an efferent or aesthetic stance. It may also indicate whether multimedia components engaged students.

9. **When you view a digital story, what pace or speed do you prefer, and why? (For example, do you like a fast-paced story or a story that moves more slowly, and why?)**

   This question deals with the students' ability to follow the story, which connects to aspects of experiential meaning-making, that is, how much thinking and recontextualizing[174] is required to follow the events.

10. When telling a story like this, through images, sounds, and words, put in order how important these things are in telling a story.

(1 = most important)

Story

Music

Other sounds (not music)

Narration or student voice-over

Words on the screen

Images, graphics, or pictures

Design elements (transitions, fading in and out, colors, special effects)

This question relates to the multimedia nature of the digital story and will help provide insight on those aspects which drew the students' attention.

11. Thinking about the story that wasn't your favorite, why do you think it wasn't a favorite?

This question may relate to several components of the digital storytelling experience, including the complexity of a multimodal experience and the reader/viewer's transaction with the text.

12. In viewing someone else's story, I didn't really like when the story had . . .

13. For a story that wasn't one of your favorites , do you think this was because

(Check as many as you want)

It was too hard for me to understand

It wasn't told in an interesting way or it was boring

I wasn't interested in the topic or I didn't like the topic

It had too much stuff: images, music, special effects

It didn't have enough stuff: images, music, special effects

I didn't like the images

Some other reason: write what you think here

This question may relate to several components of the digital storytelling experience, including the complexity of a multimodal experience and the reader/viewer's transaction with the text.

14. Did you feel like you were concentrating really hard as you watched any particular story? What do you think made you want to pay attention?

15. If you could change something about any of the stories, what would you change?

This question may provide insight as to whether the student felt involved or engaged in the story and may suggest ways to enhance response or involvement.

16. If you could change something about any of the digital stories, would you change any of these elements? How?

Prompts:

Music–change it, add it, take it away

Pace–faster/slower

Pictures or images-fewer, more, bigger, smaller, use other pictures instead

Change this about the story that was told:

Change something else:

17. After you watched the stories, what did you want to do next?

This question may reveal efferent qualities of the students' experience with the stories, i.e., what they take away – perhaps questions, interests, or areas to investigate. Depending on the topic of the digital story, this question may show a call to action; perhaps students want to do or make something as a result of what they saw or learned.

18. After you watched the stories, did you want to do any of these things?

Prompts: Watch another digital story, make my own digital story, learn about this topic: _____, talk to _____, ask someone about _____do something else

19. What would you like your librarian to do next with digital storytelling in your school library?

20. Think about the digital stories you just viewed, and think about stories you read in books. How do digital stories and stories in books compare? (In other words, how are they the same or different?)

A.3 STUDENT FOCUS GROUP QUESTIONS AND SCRIPT

Focus Group Script and Questions

A. Welcome and introductions, explanation of the process and purpose of today's focus group. The process will start with this introduction, demonstration and testing of the audio recording equipment, then questions and discussion, and a time for conclusion and an opportunity for participants to offer any additional information. The purpose of the focus group is to obtain feedback from the students on their experiences as listener-viewers in digital storytelling.

B. Questions for the focus group

1. The survey asked about things you like to see and hear when listening to and viewing a digital story. Can you talk more about your answer?
2. What special effects did you notice in the digital stories? Which ones did you like or not like?
3. One of the survey questions asked about stories that really made you concentrate or pay attention. Tell me about what makes you pay attention to a digital story.
4. What did you do while you watched the stories?
5. What did you notice around you when you watched the stories?
6. Did the story make you think of questions to ask the person who made it, maybe about the story itself, or how they put it together? What questions would you ask a person whose story you watched?
7. One of the survey questions asked what would you like your librarian to do next with digital storytelling in your school library. Can you talk more about that?
8. Can you think of an experience that is similar to watching a digital story?
9. What words would you use to describe how it feels to watch a digital story?

10. What experiences did you have as a listener-viewer that the survey didn't ask you about?

C. Concluding remarks from the researcher, invitation for any additional comments from students, and thanks for participating in the focus group.

A.4 TEACHER AND LIBRARIAN INTERVIEW QUESTIONS

Teacher and Librarian Interview Questions

1. Talk about this digital storytelling lesson in your classroom.
2. Why did you decide to use digital storytelling for this lesson?
3. Did you consult any standards documents (academic standards for subject area, library standards, other standards) in planning this lesson?
4. Were there specific parts of the teaching and planning that you were responsible for, as you worked with your colleague? Can you talk about the process of planning to teach this lesson?
5. What other experiences do you have with digital storytelling?
6. What training or professional development do you have in the area of digital storytelling?
7. What is your perception of the students' engagement in creating digital stories?
8. What is your perception of the students' engagement in listening and viewing digital stories?
9. When you planned this lesson, were there "intangibles" that you hoped students would gain, in addition to the learning of the content? Can you describe these attributes?
10. Will you teach digital storytelling again? What would you keep or change about the lesson?
11. Is there anything else you would like to describe or reflect on regarding this digital storytelling project? Do you have any insights you would like to share regarding the role of the listener-viewer in digital storytelling in your classroom?

APPENDIX B: SELECTED DATA

B.1 RESEARCH ACTIVITIES SCHEDULE

Task	Date
Dissertation Proposal Defense	**November 2010**
Identification of school sites for study	**November 2010-February 2011**
Revisions to study, survey instruments, invitations, consent forms, per committee instructions	**December 2010-January 2011**
For study: Teacher and librarian agreement to participate, identification of appropriate digital storytelling project in curriculum, selection of class for the study	**November 2010-February 2011**
School district permission (3 sites)	**December 2010-February 2011**
Institutional Review Board application and approval	**December 2010-February 2011, modifications in March and May**
Distribute and collect parent/child and teacher/librarian consent forms (3 sites)	**January 2011-March 2011**

Revision of survey questions, according to pre-test feedback and analysis	**January 2011 (approximately mid-January)**
Digital storytelling projects in schools **Observation of students during digital storytelling project development and viewing** **Written survey** **Focus group** **Teacher-librarian interviews**	**February-May 2011** **Number of days in each school site, depend on lesson plans; about one hour per day** **Administered on performance day or as soon as possible; about 30 minutes** **Conducted on performance day or as soon as possible, about 20 minutes** **Conducted on performance day or as soon as possible, about one hour**
Data organization	**February-May 2011**
Data analysis	**February-July 2011**
Writing	**May-July 2011**

B.2 CLASSROOM HANDOUTS AND TEACHING MATERIALS

School 1

Mrs. Pearl's Topics and Subtopics

This topic and subtopic list on "Ancestor Worship" is a sample of one of the 15 topic and subtopic lists that Mrs. Pearl developed. Each student received his or her own. The remaining topics were Geography, Great Wall of China, Terra Cotta Army, Silk Road, Marco Polo, Chinese New Year and Traditions, Qin Dynasty, Chinese Food and Chopsticks, Giant Panda, Confucius, Buddhism, Dragon Lore, Animals of the Zodiac, and Achievements and Inventions.

10. ANCESTOR WORSHIP AND ORACLE BONES

ROLES OF EACH FAMILY MEMBER

HOW HONORED

ANCESTORS' SPIRITS

COMMUNICATING WITH ANCESTORS

School 2 Ms. Black's Teacher Lesson Plan

3/8/11

Ms. [redacted]
Technology **Lesson Plan**/ Book Trailers
(Research Project: Rebecca Morris)

Level- Grades 4/5 , Rooms [redacted]
Number of Lessons: 7 + one share/celebrate + one survey Rm [redacted]
Technology Used- iMovie, Google images, video cameras.

Preparation - Examples of Book Trailers, Example of Movie Trailers, Student Work Sheets, Storyboard, Folders, Citation page.

TTW make sufficient copies of materials.

Overview- Intermediate students in grades 4/5 will create "Book Trailers" similar to movie trailers based on classroom novels. Students may create more than one book trailer as time permits. A variety of methods may be used to create a book trailer. The book trailer may contain music, recorded voice, still images, hand created art, and video. The length of video should be less than 10 minutes.

Day One-

- TTW introduce the assignment. TTW show one movie trailer, two book trailers and one trailer based on a book that Ms. [redacted] has read.
- TTW divide students into groups based upon the book read.
- TSW understand that they may have to help other teams as needed.
- TSW type and complete a team worksheet and an individual worksheet.
- TSW assign jobs and take turns completing all tasks.

Day Two-

- TTW demonstrate how to collect images from Google and citations for images.
- TTW demonstrate how to save the pictures and import into iPhoto.
- TSW collect images and create citations for images.
- TSW assign jobs per group (a person who will complete citation page, a typist, a person to collect and put away all materials)

School 2 Student Work Log (blank)

3/8/11
INDIVIDUAL Technology "Book Trailer" Worksheets

Here's your chance to tell about what you did to contribute to your groups book trailer. Print neatly and tell as much as you like. Remember to do this before the end of each class.

NAME:
DATE:
WHAT YOU DID THIS DAY:

NAME:
DATE:
WHAT YOU DID THIS DAY:

NAME:
DATE:
WHAT YOU DID THIS DAY:

NAME:
DATE:
WHAT YOU DID THIS DAY:

NAME:
DATE:
WHAT YOU DID THIS DAY:

NAME:
DATE:
WHAT YOU DID THIS DAY:

NAME:
DATE:
WHAT YOU DID THIS DAY:

NAME:
DATE:
WHAT YOU DID THIS DAY-

School 2 Student Self-Evaluation (blank)

5/24/11
BOOK TRAILERS

Student self-evaluation

Please answer the following questions as completely as you can. You can use the back side of the paper if needed.

Your Name: _____

Your Book's Name and author:

_____

_____

What parts(s) of this project were your primary responsibility? Go ahead and brag about yourself. _____

_____

_____

Did you help other people in your group? If so, how? Can you give an explanation?

_____

_____

Give yourself a grade for your overall work (1-5, 5 is greatest) _____

Did you like this project? Dislike this project? Give a grade (1-5) _____

What would you do differently if you could do this over again?_____

_____

_____

Comments about this project

_____

_____

_____

What would you like your parents to know about you and this project?_____

_____

_____

Other?

_____

_____

_____

_____

School 2 Student Planning Document (blank)

3/8/11
Technology "Book Trailer" Worksheets

Please complete the form and print neatly. Remember to include spaces between different areas. Refer to your book for information.

1- The Names of all group members (first and last names)

_____

_____

2- Name of Book:

_____

3- Author:

_____

4- Overview of Story –List events in order and then, narrow down to the 7 or less :

1-
2-
3-
4-
5-
6-
7-

5- On the back, name the main characters and briefly describe each character. What is their relationship to the book? What did you like or not like about each character?

6- Setting (Describe the background(s) for the scene(s) that you may want to include in your book trailer). What scenes are realistic?

a-
b-
c-

7- Assign jobs to members of your group.

- Research possible quotes from book.
- Research possible music.
- Research jpg's from Google.com
- Research jpg's from [redacted] Library Website, Grolier's Encyclopedia, Britannica

8- Complete a story board. Go to "Pages." File, new from template chooser, misc., storyboard.

9- Transfer all material to iMovie.

a- New project. Name.
b-

School 2 Rubric

Rubric Made Using:
RubiStar (http://rubistar.4teachers.org)

Digital Storytelling : Book Trailers/Group Evaluation/Digital Storytelling

Teacher Name: [redacted]

Student Name: _____

CATEGORY	4	3	2	1
Editing	Evidence shows the students have learned how to add transitions, special effects, and audio. The editing added to the video and did not distract from the books message/theme.	Evidence shows students have learned a bit of how to add transitions, special effects, and audio. The editing added a little bit to the video and did not distract from the books message/theme.	Little evidence showing the students have learned how to add transitions, special effects, or audio. The editing DID NOT add to the video and did distract from the books message/theme.	LITTLE OR NO evidence that the students have learned how to add transitions, special effects, or audio. The editing hurt the video and distracts from the books message/theme.
Basic Elements	The Book Trailer contains an introductory frame, an end frame, citations, images, appropriate sounds/songs, a summary/conclusion, and more.	The Book Trailer contains an introductory frame, an end frame, images, some sounds/songs, NO citation page, and NO summary/conclusion.	The Book Trailer contains an introductory frame, NO end frame, NO citations, FEW images, NO sounds/songs, AND NO summary/conclusion.	The book trailer has a few frames.
Collaboration and Contribution	The Book Trailer is successful. There is evidence of each persons collaboration, and contribution, of, ideas.	The Book Trailer is partly successful. It is clear that some members had difficulty collaborating, and accepting the contribution, of everyone's ideas.	The Book Trailer is not successful as an example of group work. All work seems to come from one or two members.	The Book Trailer completely Lacks, evidence of communication, and collaboration among group members
Content and Theme	Content is clearly relevant to story and theme, message is distinctly clear	Content, has, some relevance, to, story, and theme, message, is, clear with, some, confusing points	Content, has, little relevance, to, story, and theme, message, is, not clear	Content, has, no relevance, to, story and, theme, there, is no, message
Documentation	All sources are cited.	Most sources are cited.	Some sources are cited.	Little to none of the sources are cited.
Images	Images create a distinct mood that matches different parts of the story. The images make	Some Images create a distinct mood that matches different parts of the story. Some of the images make	Few of the Images create a distinct mood that matches different parts of the story. Few images make the story	Little or no attempt to use images to create an appropriate mood .

	the story understandable.	the story understandable.	understandable.	
Above and Beyond	Parts of the book trailer are unique, demonstrate great effort, and succeed in making the book trailer better.	There are some Parts of the book trailer that are unique, demonstrate some effort, and help in making the book trailer better.	There was effort made to go above and beyond the requirements, but they did not succeed in making the book trailer any better.	Little or no effort was made to go above and beyond the requirements.
Overall	The Book Trailer is successful because it make people want to read this book. It shows great cooperation and work ethic. Everything from all categories above is included. The Book Trailer looks professional.	The Book Trailer is a nice first effort. More planning, cooperation, and effort outside of class was needed. It is Okay. Some people might be influenced to read this book.	Although completed, the Book Trailer is disappointing. It does not match the mood of the book or make someone want to read it.	The Book Trailers is disjointed, makes no sense, and is not entertaining. It is not complete.

APPENDIX C: CODING SCHEME

CODES USED IN NVIVO QUALITATIVE ANALYSIS SOFTWARE

teachers (parent code, level 1)
teacher's instruction or facilitation of digital storytelling (child codes, level 2)
teacher collaboration
recommendations for teaching and facilitating
classroom management
adult facilitators
students create digital story (parent code, level 1)
student-creator considers listener-viewer response (child code, level 2)
student views or listens to work-in-progress (child code, level 2)
peer teaching (child codes, level 3)
noise and volume issues in recording and viewing
kinesthetic watching and listening
student terminology (child codes, level 2)
student self-evaluation or reflection
student research and information gathering approaches
student reading and writing skills
student motivation, engagement and enjoyment
student computer skills
choice of topic
student(s) view(s) completed story (parent code, level 1)
what to do next with digital storytelling (child codes, level 2)
learning
kinesthetic watching and listening
video codes (child code, level 3)
yawn (child codes, level 4)
touch or lean on student
touch computer or technology equipment

		tap or bounce
		talk
		talk to teacher or librarian
		talk to self
		talk to particular student
		talk to general group
		smile
		sigh or deep breath
		shush student
		shift in posture
		shake head
		roll eyes
		put head down
		play with or manipulate something
		move away from group
		look down
		look at researcher
		look at particular student(s)
		look around room
		laugh
		gasp
		fidget (several movements in a row - hands, body, looking around)
		dance
		clap
	features of digital stories which draw student attention (child code, level 2)	
		relevant to student(s) (child codes, level 3)
		placeness, realism
		images and special effects
		friends, peers
		boring
	experiences similar to digital storytelling (child code, level 2)	
	emotional responses (child code, level 2)	
		shy or embarrassed (child codes, level 3)
		pride, own story was favorite
		funny, humorous, laugh, entertaining, bloopers
	classroom set-up for viewing digital stories	
school environment, class structure, schedule (parent code, level 1)		
researcher roles (parent code, level 1)		
	researcher's role, watch student story (child codes, level 2)	
	researcher's role, tech help and troubleshooting	
	researcher's role, conversation	
	researcher's role, consultant	
general research study and report notes (parent code, level 1)		

	survey logistics (child codes, level 2)
	quotable

APPENDIX D: IRB AND RELATED DOCUMENTATION

D.1 TEACHER AND LIBRARIAN INVITATION (ALL SCHOOLS)

601 IS Building
135 North Bellefield Avenue
Pittsburgh, PA 15260

Dear Teacher and Librarian,

Thank you for welcoming me into your classroom and school library to conduct the research study, **Responses of Listener-Viewers in Digital Storytelling in the Middle School Library**. This study has been approved by the district and building administration and by the University of Pittsburgh Institutional Review Board. You are invited to participate in a face-to-face interview as part of this study. Your participation is voluntary.

In this study, the students will develop digital storytelling projects in a classroom/school library activity that is part of the regular curriculum. Digital storytelling is a short, student-made multimedia story with photos or illustrations, music, and/or narration. Digital storytelling is used in K-12 education to help students develop technology and information literacy skills and content area knowledge. I am interested in learning how middle school students respond as listener-viewers to digital storytelling. This research will help teachers and school librarians develop best practices for teaching and using digital storytelling in the curriculum to support student learning.

To help you understand the context of this study, I am doing this research as part of my dissertation, as I work toward completing my PhD in Library and Information Science. I am a former elementary classroom teacher and middle school librarian in the Pittsburgh area. I am mindful of the importance of your responsibilities as an educator, and it is my intention to provide an experience that may provide interesting insights for you and your students who participate, without taking away learning time.

Please see the attached pages for further details, sample interview topics, and an official consent form to complete if you decide that you would like to participate. Please feel free to contact me if you have questions about the study. You can submit completed consent forms to me.

Thank you for your consideration.

Sincerely,

Rebecca Morris, MLIS, PhD Candidate & Teaching Fellow
Library and Information Science Program and School Library Certification Program
School of Information Sciences, University of Pittsburgh
Phone: 412-400-8692 Email: rjm68@pitt.edu or rmorris1855@gmail.com

D.2 SCHOOL DISTRICT PERMISSION

School Administrator Permission, Schools 1, 2, and 3

601 IS Building
135 North Bellefield Avenue
Pittsburgh, PA 15260

(School Information)

Dear Xxxxxx:

I am writing to request the permission of your school building administration to visit and observe a class in your school as part of my dissertation research in Library and Information Science. I am a former elementary classroom teacher and middle school librarian in the Pittsburgh area, and I am working toward completing my PhD at the University of Pittsburgh. I selected your school as a possible study location through my professional relationship with your school librarian, Ms. XXX.

In this study, I am interested in observing and interviewing students and teachers involved in digital storytelling projects. As you may know, digital storytelling is used in K-12 education to help students develop technology and information literacy skills and content area knowledge. Digital storytelling is a short, student-made multimedia story with photos or illustrations, music, and/or narration. The lesson that I want to observe has been designed by teacher Ms. XXX in collaboration with a classroom teacher as part of the school curriculum, and it does not involve an experimental design. The steps of my study are listed below. Steps 2-6 would take place at your school. The number of days I would visit depends on the teacher's lesson plans and school schedule, but I anticipate that the lesson and study activities will take about 5-7 class periods.

8.	Pre-test of survey instrument with students who are not in one of the two study settings
9.	Observation of students during the development of digital storytelling projects. Instruction led by classroom teacher.
10.	Observation of students during viewing of digital stories.
11.	Written survey of all participating students as soon after viewing as possible, same day if school schedule allows (about 20 minutes)
12.	Focus-group of 6-8 students (about 30 minutes)
13.	Face-to-face interview with teacher (about 45 minutes)

I am interested in learning how students respond as listener-viewers to digital storytelling. I have attached here sample survey and interview topics for your reference. This research will help teachers and school librarians develop best practices for teaching and using digital storytelling in the curriculum to support student learning. As a former K-12 teacher, I am mindful of the importance of students' learning time, and it is my intention to provide an experience that may provide interesting insights for the teachers and students, without significant interruption to the school day.

This study has been approved by my dissertation committee at the University of Pittsburgh, School of Information Science and by the University of Pittsburgh Institutional Review Board (IRB). As part of the research study requirements, I must provide documentation of permission from building administration to conduct my study at your school. I have attached here my current clearances and also my curriculum vitae for your review.

If you grant your permission for me to do my research at xxx School, a signed statement like the attached sample below (on school letterhead) would provide sufficient documentation for me to submit to the University of Pittsburgh IRB. The next step after receiving permission will be to distribute letters of invitation and consent forms, which I have ready to send at the appropriate time.

Please feel free to contact me by phone (412-400-8692) or email (rmorris1855@gmail.com or rjm68@pitt.edu) if you have questions about the study or if you would like any additional information from me.
Thank you for your consideration.

Respectfully,

Rebecca Morris, MLIS, PhD Candidate & Teaching Fellow
Library and Information Science Program and School Library Certification Program
School of Information Sciences, University of Pittsburgh
Phone: 412-400-8692 Email: rjm68@pitt.edu or rmorris1855@gmail.com

(Page 2)
Response of Listener-Viewers in Digital Storytelling in the Middle School Library
Rebecca Morris, University of Pittsburgh

Sample Statement of Permission
(Please attach other documents required by school district, as applicable).

On behalf of (school name/district name), I grant permission to Rebecca Morris, PhD Candidate at the University of Pittsburgh, to conduct the study, Responses of Listener-Viewers in the Middle School Library, at this school. I understand that school district permission is required to meet the requirements of University Institutional Review Board (IRB) approval for this study.

_____

Printed Name of Person Granting Permission Role of Person Granting Permission

Signature Date

Sample Student Survey Questions:

- Did you feel like you were concentrating really hard on any particular story? What do you think made you want to pay attention?

- Think of a favorite story of the ones you just viewed. What did you like about it and why?

Sample Student Focus Group Questions:

- One of the survey questions asked what would you like your librarian to do next with digital storytelling in your school library. Can you talk more about that?

- What special effects did you notice in the digital stories? Which ones did you like or not like? Why?

Sample Teacher/Librarian Interview Questions:

-What experiences do you have with digital storytelling?

-What is your perception of the students' engagement in listening to and viewing digital stories?

Research Study Summary Requested by School 2 School Board

Research Study Information for xxx School Board

March 7, 2011

Study Title: Response of Listener-Viewers in Digital Storytelling in the Middle School Library

In this study, I am interested in observing and interviewing students and teachers involved in digital storytelling projects. As you may know, digital storytelling is used in K-12 education to help students develop technology and information literacy skills and content area knowledge. Digital storytelling is a short, student-created multimedia story with photos or illustrations, music, and/or narration. The lesson that I want to observe has been designed by the classroom teacher as part of the school curriculum, and it does not involve an experimental design. The steps of my study are listed below. The number of days I would visit depends on the teachers' lesson plans and school schedule, but I anticipate that the lesson and study activities will take about 5-6 class periods.

Sequence of Activities:

1. Observation of students during the development of digital storytelling projects. Instruction led by classroom teacher, xxx

2. Observation of students during presentation/viewing of their digital stories. Instruction led by classroom teacher, xxx

3. Written survey of all participating students soon after viewing, same day if school schedule allows (about 20-25 minutes)

4. Focus-group of 6-8 students (about 30-40 minutes)

5. Face-to-face interview with classroom teacher (about 45 minutes)

D.3 TEACHER AND LIBRARIAN CONSENT

TITLE: Responses of Listener-Viewers in Digital Storytelling in the Middle School Library

PRINCIPAL INVESTIGATOR:
Rebecca J. Morris, School of Information Sciences, University of Pittsburgh
601 IS Building, 135 North Bellefield Avenue, Pittsburgh, PA 15260
Phone: 412-400-8692; Email: rjm68@pitt.edu or rmorris1855@gmail.com

FACULTY MENTOR:
Dr. Mary Kay Biagini, School of Information Sciences, University of Pittsburgh
601B IS Building, 135 North Bellefield Avenue, Pittsburgh, PA 15260
Phone: 412-624-5138; Email: mkbiagini@sis.pitt.edu

Why is this study being done?
The purpose of this research is to study how middle school students respond as listener-viewers to a classroom activity known as "digital storytelling." Digital storytelling is a short, student-made multimedia story with photos or illustrations, music, and/or narration. Digital storytelling is used in K-12 education to help students develop technology and information literacy skills and content area knowledge. In this study, the students will develop digital storytelling projects in a classroom/library activity that is part of the regular curriculum.

This research will help teachers and school librarians develop best practices for teaching and using digital storytelling in the curriculum to support student learning. In addition, the research will help contribute to literature on digital storytelling in library and information science.

Who is being asked to take part in this study?
The teachers and librarians who are facilitating the digital storytelling projects that are being studied in the Responses of Listener-Viewers in Digital Storytelling in the Middle School Library research are being asked to take part. Teachers and librarians from another middle school class in the Pittsburgh area are also invited to take part in a similar version of the study at their school. All of the teachers and librarians facilitating the digital storytelling projects are invited to participate.

What are the procedures of this study?
If you agree to participate in this research study, you will take part in a face-to-face interview with the Principal Investigator (Rebecca Morris) following the student activities in the digital storytelling project. The interview will be audio recorded in order to aid in accurate transcription.

The following are sample interview questions:
-What experiences do you have with digital storytelling?
-What is your perception of the students' engagement in listening to and viewing digital stories?

How will my eligibility for the study be determined?
All teachers and librarians of the class selected for the study are invited to participate.

What are the possible risks and discomforts of this study?
The potential risks for individuals who participate in this study are minimal. A breach of confidentiality is a possible risk as well though the researcher will do everything she can to maintain confidentiality throughout your participation in this study. You should understand that you are free to stop the study and withdraw your consent in the study at any time. The researcher has been trained to maintain privacy.

Will my I benefit from taking part in this study?
There is no direct benefit or guarantee for participation in the study. You will have the opportunity to provide information that will help to build more effective methods for instruction in information technology and information literacy skills, which is a potential indirect benefit of the study.

Are there any costs to me if I participate in this study?
There are no costs to you for participating in this study.

How much will I be paid for completing this study?
There is no compensation involved in this study.

Will anyone know that I am taking part in this study?
All records pertaining to your involvement in this study are kept strictly confidential (private). Your identity will not be associated with any survey documents or reports of the study, nor will the name of the school be revealed in any description or publications of this research. Comments from the interview may be used in my dissertation and related articles, but identifying information will be removed and pseudonyms will be used instead.

In unusual cases, your research records may be released in response to an order from a court of law. It is also possible that authorized representatives from the University of Pittsburgh Research Conduct and Compliance Office or the University of Pittsburgh IRB may review your data for the purpose of monitoring the conduct of this study.

Is my participation in this study voluntary?
Yes, your participation in this study is completely voluntary. You may refuse to take part in it, or stop participating at any time, even after signing this form. Your decision will not affect your relationship with the University of Pittsburgh, nor will you lose any benefits that you might be eligible for because of your decision. You may be withdrawn from the study at any time by the investigators: for example, if you were subsequently found to meet any of the study criteria that would exclude him/her from participating.

How can I get more information about this study?
If you have any further questions about this research study, you may contact the investigator listed at the beginning of this consent form. If you have any questions about your rights as a research subject, please contact the Human Subjects Protection Advocate at the University of Pittsburgh IRB Office, 1.866.212.2668.

SUBJECT'S CERTIFICATION
I have read the consent form for this study and any questions I had, including explanation of all terminology, have been answered to my satisfaction.

I understand that I am encouraged to ask questions about any aspect of this research study during the course of this study, and that those questions will be answered by the researchers listed on the first page of this form.

I understand that my participation in this study is voluntary and that I am free to refuse to participate or to withdraw my consent and discontinue my participation in this study at any time.

I agree to participate in this study.

I will receive a copy of this consent form.

_____
Printed Name of Participant

_____ _____
Signature of Participant Date

CERTIFICATION OF INFORMED CONSENT
I certify that I have explained the nature and purpose of this research study to the above-named individual(s), and I have discussed the potential benefits and possible risks of study participation. Any questions the individual(s) have about this study have been answered, and we will always be available to address future questions, concerns or complaints as they arise. I further certify that no research component of this protocol was begun until after this consent form was signed.

Rebecca Morris Principal Investigator
Printed Name of Person Obtaining Consent Role in Research Study

_____ _____
Signature of Person Obtaining Consent Date

D.4 PARENT INVITATION

D.4.1 Teacher Cover Letters for Parent Invitation

Schools 1 and 3, Written by Rebecca Morris

February 2011

Dear Parents and Guardians,

The enclosed letter is an invitation for your child to participate in a research study. The study is being conducted by Rebecca Morris, a PhD Candidate at the University of Pittsburgh. Ms. Morris is a former first grade teacher and school librarian in the Pittsburgh area, and her research interest is student learning in the middle school library.

The research activities involve observation of a classroom activity taught by the teacher and librarian, with interview and a survey for the students afterward. The learning activities have been designed by your child's classroom teacher (me) and the school librarian, not the researcher. The activities are part of the regular school curriculum and this is not an experimental learning activity. Participation is voluntary, and your choice to have your child participate or not has no effect on his or her grade. More details about the study are included in the letter from Ms. Morris.

This study has been approved by school district administration and the University of Pittsburgh. Please contact me or Ms. Morris (contact information included in the enclosed letter) if you have any questions or concerns.

Thank you for your consideration.

Sincerely,

School 2, Written by classroom teacher

3/19/11

Dear Parents & Guardians,

Through discussion and collaboration, the 4/5 teachers and the technology teacher have created a sequence of lessons to integrate technology into the Reading/Language Arts curriculum. As we work on the Book Report and Literature Circles, we are having the students create Book Trailers. These are similar to the movie trailer advertisements. Students will be focusing on the same concepts in making these as we are emphasizing in class.

Coincidentally, as research proposal came our way that was looking at just such a sequence of lessons.

We invite your child to be included in the study, as it won't impact or interrupt the regular curriculum.

More information is attached from the researcher, Ms. Rebecca Morris.

We would appreciate your signatures on the pages attached.
Your child will also sign similar papers once you have returned your signed papers.

Additional questions can be directed to:
Ms. XXX, Technology Teacher
Ms. XXX, Classroom Teacher

Thank You!

D.5 PARENT CONSENT

TITLE: Responses of Listener-Viewers in Digital Storytelling in the Middle School Library

PRINCIPAL INVESTIGATOR:
Rebecca J. Morris
Library and Information Science PhD Program
School of Information Sciences, University of Pittsburgh
135 North Bellefield Avenue, Pittsburgh, PA 15260
Phone: 412.400.8692; E-mail: rjm68@pitt.edu or rmorris1855@gmail.com

FACULTY MENTOR
Dr. Mary Kay Biagini, School of Information Sciences, University of Pittsburgh
601B IS Building, 135 North Bellefield Avenue, Pittsburgh, PA 15260
Phone: 412-624-5138; Email: mkbiagini@sis.pitt.edu

Why is this study being done?
The purpose of this research is to study how middle school students respond as listener-viewers to a classroom activity known as "digital storytelling." Digital storytelling is a short, student-made multimedia story with photos or illustrations, music, and/or narration. Digital storytelling is used in K-12 education to help students develop technology and information literacy skills and content area knowledge. In this study, the students will develop digital storytelling projects in a classroom/library activity that is part of the regular curriculum. This research will help teachers and school librarians develop best practices for teaching and using digital storytelling in the curriculum to support student learning.

Who is being asked to take part in this study?
Students from your child's class are being asked to participate in this study. Students from another middle school class in the Pittsburgh area are also invited to take part in a similar version of the study at their school. All students in each of the two classes will be invited to take part.

What are the procedures of this study?
If you agree to allow your child to participate in this research study, your child will be take part in two, possibly three, activities to accompany a planned instructional lesson in the classroom. Please note that the classroom lesson has been developed by the classroom teacher and school librarian, and it is not specifically designed as a research study activity. The Principal Investigator (PI) is Rebecca Morris, a former classroom teacher and former school librarian in the Pittsburgh area.

CLASSROOM INSTRUCTION
Ms. Morris will be present in the room as an observer during the instruction and project development phase. Participants and non-participants will take part in the same curricular content and lesson; additional components for participants are the survey interview and possibly the focus group. During the sharing of projects, Ms. Morris will observe and video record the student-participants as a group while they view the digital storytelling projects.

During this phase, the Ms. Morris will record general observations on how the students watched the digital stories – for example, if they watched while sharing reactions with classmates and if the stories captured their attention. The digital storytelling projects will be part of the research data.

SURVEY
In the next phase, students will be asked to respond to written survey questions about what it was like to view classmates' digital storytelling projects. The survey will take about 20-30 minutes to complete. Sample questions from the survey are as follows:

- Did you feel like you were concentrating really hard on any particular story? What do you think made you want to pay attention?

- Think of a favorite story of the ones you just viewed. What did you like about it and why?

FOCUS GROUP
A small group of 6-8 students will be randomly selected to participate in the last phase of the study, a focus group session of about 30 minutes. Students in the focus group will be asked questions about what it was like to view classmates' digital storytelling projects. The focus group will be audio-recorded. Sample questions from the focus group are as follows:

- One of the survey questions asked what would you like your librarian to do next with digital storytelling in your school library. Can you talk more about that?

- What special effects did you notice in the digital stories? Which ones did you like or not like? Why?

How will my child's eligibility for the study be determined?
All students of the selected class are invited to participate.

What are the possible risks and discomforts of this study?
The potential risks for individuals who participate in this study are minimal and may include possible frustration if a student encounters difficulty describing his or her thoughts on digital storytelling to the researcher. A breach of confidentiality is a possible risk as well though the researcher will do everything she can to maintain confidentiality of your child throughout her/his participation in this study. You should understand that your child is free to stop the study and withdraw his or her consent in the study at any time. The researcher has been trained to maintain privacy.

Will my child benefit from taking part in this study?
There is no direct benefit or guarantee for participation in the study. Your child will have the opportunity to provide information that will help to build more effective methods for instruction in information technology and information literacy skills, which is a potential indirect benefit of the study.

Are there any costs to my family if my child participates in this study?
There are no costs to you or your child for participating in this study.

How much will my child be paid for completing this study?
If your child completes the interview session, s/he will receive a small school supplies gift from the researcher. If s/he leaves the study early, s/he will also receive the items for participating. (Note: As explained in Chapter 3, this section about being paid was included in the original consent form approved by IRB and it was used for School 1. Per request from School 2, a modified version was approved by IRB and used with Schools 2 and 3).

Will anyone know that my child is taking part in this study?
All records pertaining to your child's involvement in this study are kept strictly confidential (private). Your child's identity will not be associated with any survey documents or reports of the study, nor will the name of the school be revealed in any description or publications of this research. Words that your child says during the project may be used in my dissertation and related articles, but identifying information will be removed and pseudonyms will be used instead.

In unusual cases, your child's research records may be released in response to an order from a court of law. It is also possible that authorized representatives from the University of Pittsburgh Research Conduct and Compliance Office may review your child's data for the purpose of monitoring the conduct of this study.

Is my child's participation in this study voluntary?
Yes, your child's participation in this study is completely voluntary. You or your child may refuse to take part in it, or stop participating at any time, even after signing this form. Your decision will not affect your/your child's relationship with the University of Pittsburgh or your child's school, nor will you/your child lose any benefits that you might be eligible for because of your decision. Your child may be withdrawn from the study at any time by the investigators: for example, if s/he were subsequently found to meet any of the study criteria that would exclude him/her from participating.

How can I get more information about this study?
If you have any further questions about this research study, you may contact the investigator listed at the beginning of this consent form. If you have any questions about your rights as a research subject, please contact the Human Subjects Protection Advocate at the University of Pittsburgh IRB Office, 1.866.212.2668.

Responses of Listener-Viewers in Digital Storytelling in the Middle School Library

SUBJECT'S CERTIFICATION

I have read the consent form for this study and any questions I had, including explanation of all terminology, have been answered to my satisfaction.

I understand that I am encouraged to ask questions about any aspect of this research study during the course of this study, and that those questions will be answered by the researchers listed on the first page of this form.

I understand that my child's participation in this study is voluntary and that I am free to refuse to participate or to withdraw my consent and discontinue my child's participation in this study at any time.

I agree for my child to participate in this study. I will receive a copy of this consent form.

_____

Printed Name of Child

I understand that, as a minor (age less than 18 years), the above-named child is not permitted to participate in this research study without my consent. **Therefore, by signing this form, I give my consent for her/his participation in this research study.**

_____	_____
Parent's Name (Print)	Relationship to Participant (Child)
_____	_____
Parent's Name (Print)	Relationship to Participant (Child)
_____	_____
Signature of Parent	Signature of Parent

CERTIFICATION OF INFORMED CONSENT

I certify that I have explained the nature and purpose of this research study to the above-named individual(s), and I have discussed the potential benefits and possible risks of study participation. Any questions the individual(s) have about this study have been answered, and we will always be available to address future questions, concerns or complaints as they arise. I further certify that no research component of this protocol was begun until after this consent form was signed.

Rebecca Morris	Principal Investigator
Printed Name of Person Obtaining Consent	Role in Research Study
_____	_____
Signature of Person Obtaining Consent	Date

D.6 STUDENT ASSENT

TITLE: Responses of Listener-Viewers in Digital Storytelling in the Middle School Library

PRINCIPAL INVESTIGATOR:
Rebecca J. Morris, Library and Information Science PhD Program
School of Information Sciences, University of Pittsburgh

FACULTY MENTOR
Dr. Mary Kay Biagini, School of Information Sciences, University of Pittsburgh

Why is this study being done?
This study is being done to learn how middle school students like you respond as viewers in a school activity called "digital storytelling." You'll be making digital storytelling projects with your teacher and librarian in school. This research will help teachers and school librarians develop the best ways to teach digital storytelling to help kids learn. The researcher is Ms. Morris, who used to be a school librarian and classroom teacher.

Who is being asked to take part in this study?
Students from your class are being asked to participate. Students from another middle school class in the Pittsburgh area are also invited to take part in a similar version at their school. All students in each of the two classes will be invited to take part.

What's going to happen in this study?
As a regular part of school, you're going to make a digital story with your teacher and librarian. The researcher, Ms. Morris, will be in your classroom to watch the students as a group while you learn about and make your digital story. Ms. Morris will do a video recording, just of the part of the lesson when you get to watch everyone's stories. If you participate in the study, you'll also be invited to answer some survey questions about digital storytelling and you might be asked to join a small group discussion to talk more. This small group is called a focus group.

One survey question is this:

- Think of a favorite story of the ones you just viewed. What did you like about it and why?

One focus group question is this:

- What special effects did you notice in the digital stories? Which ones did you like or not like? Why?

Here are some other important things to know about this study:

- All students of your class class are invited to participate.
- Answering survey questions and focus group questions doesn't have anything to do with your grades in school, and no extra homework or assignments are required.
- Ms. Morris won't use your name in any research from this study.
- You can stop participating in the study at any time.
- There is no cost to participate and you won't get paid.
- You'll get a small school supplies gift for participating, even if you don't do the whole study.

(Note: As explained in Chapter 3, this section about being paid was included in the original consent form approved by IRB and it was used for School 1. Per request from School 2, a modified version was approved by IRB and used with Schools 2 and 3).

- This study is voluntary, which means it's up to you whether you do it or not. Student who do the study also have to have parent permission. (Parents and guardians have a separate form to fill out).

How can I get more information about this study?
If you have questions, check with your parents or guardians about contacting the investigator listed at the beginning of this form. Parents and guardians also have more details about the study in their consent form. The number to call is the Human Subjects Protection Advocate at the University of Pittsburgh IRB Office, 1.866.212.2668.

Responses of Listener-Viewers in Digital Storytelling in the Middle School Library

ASSENT: FOR PARTICIPANTS
This research has been explained to me, and I agree to participate.

_____
Printed Name of Student

_____ _____
Signature of Student Date

CERTIFICATION OF INFORMED CONSENT
I certify that I have explained the nature and purpose of this research study to the above-named individual(s), and I have discussed the potential benefits and possible risks of study participation. Any questions the individual(s) have about this study have been answered, and we will always be available to address future questions, concerns or complaints as they arise. I further certify that

no research component of this protocol was begun until after this consent form was signed.

__Rebecca Morris_____ __Principal Investigator_
Printed Name of Person Obtaining Consent Role in Research Study

_____ _____
Signature of Person Obtaining Consent Date

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