The Relationship Between Digital Storytelling Creation and Self-Efficacy Beliefs on
Media Production Skill Sets in First Year College Students

A THESIS
SUBMITTED TO THE FACULTY OF THE GRADUATE SCHOOL
OF THE UNIVERSITY OF MINNESOTA
BY

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IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
MASTER OF ARTS

Charles DeVaughn Miller, Adviser

February 2013

Acknowledgements

I would like to acknowledge the great support of my adviser, Dr. Charles Miller, and additional members of my Review Committee, Dr. Cassandra Scharber and Dr. Murray Jensen. Charlie, I can't thank you enough for your support through the years and instilling in me the importance of focusing on the teaching and learning objectives of those we support, while encouraging our users to strive for developing the necessary skill sets to engage with technology in meaningful ways that they will last them a lifetime.

Great thanks also to my dear friend, Linda Buturian for being an amazing champion for media literacy in the classroom and on campus. We have come a long way since 2008! Your advocacy to colleagues has helped spur a renaissance in innovative teaching with student media across the campus. Thanks you for sustaining your belief in the potential of student media projects, and the critical need for students to develop effective digital writing, media production skill sets to participate effectively in the 21st century.

I would also like to thank the guidance from my colleague, Christopher Brooks for helping me to bring greater clarity during my data analysis process. Sometimes less is more!

Thanks to the Learning Technologies program and Curriculum and Instruction Department, the incredible support from my employer, the University of Minnesota Libraries and the University of Minnesota at large, all of which have continued to provide me an amazing opportunity to explore and experience the great potential of media and its ability to transform teaching and learning. I am thankful for being able to work in this rich field and supportive environment.

Finally, many thanks for the enduring support of my family, especially my wife, Robyn Spicer. Robyn, I could not have done this without your patience and support over the years. Thank you!

Abstract

Advancements in technology, digital media, evolution in teaching methods, and a recognition that new digital media literacy skill sets are necessary to navigate this digital environment, have converged to provide new opportunities for innovative teaching and learning in higher education. One example of this progress is visible in the form of the student produced digital story project, a collection of text, images, audio and video produced together to communicate ideas on a range of topics from the student's point of view. Participation in this new form of digital writing requires the development of a new series of skill sets. This study seeks to better understand the role of an assigned media project on production skill sets gained by examining the experiences and perceived self-efficacy beliefs on media production in a class of 13 first year students in a Post Secondary Teaching and Learning writing course, each tasked with producing their own digital story on water sustainability. A secondary research question examines student preferences for equipment and media production support to assist in the successful creation of these projects.

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CHAPTER 1: INTRODUCTION

Advances in multiple areas, such as the growth of the Internet as a multimodal communication platform, development of powerful, intuitive, inexpensive digital media production tools and devices, and the gradual adoption of evolved pedagogy from traditional didactic instruction to constructivist teaching methods, have brought about exciting new possibilities for teaching in higher education. This study will explore the production skill set benefits and media support preferences of first year college students producing digital stories; a project based learning approach to instruction that exemplifies the convergence of these three areas.

The growth of the Internet has provided unprecedented opportunities for creating, sharing, and consuming multimedia content. For example, according to YouTube, the Internet's most popular video-sharing platform, 72 hours of video footage are uploaded every minute, with an average viewership of over three billion views, and 800 unique users access content every month ("Statistics," n.d.) YouTube is often considered a product of the "Web 2.0" phase of the Internet's development, a term characterized by the use of web based applications that extend functionality, greater emphasis on community, collaboration, and sharing of user generated content (Boll, 2007). Cormode, and Krishnamurthy (2008) noted that sharing of user generated content is what primary contrasts "Web 2.0" from "Web. 1.0", to the extent that these advances democratized the Internet from being an environment where few were able to share, to one where anyone with access could communicate at a relatively low barrier to entry.

In addition to Youtube, there are several examples of the "Web 2.0" environment has changing video sharing and consumption habits. For example, today there is an

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increasing frequency of video clips that are embedded into websites (e.g., educational and news sites), greater availability of Video OnDemand services that allow individuals to stream commercial content instantly on platforms such as Netflix, Amazon, and Hulu, as well as social networks, such as Facebook, where individuals can easily publish and/or share their own created media or even that found elsewhere on the Web.

A second factor contributing to video creation becoming a more viable communication medium is the availability of relatively inexpensive, technologically powerful, intuitive, digital media production computing, software tools, and video capture devices. In particular, exponential advances in integrated circuits every 18 months, sometimes referred unscientifically to "Moore's Law" (Moore, 1965), used in processors for computers/digital devices (CPU) and memory (RAM) has played a key role in transitioning from analog to digital video. Coupled with processing capability, significant gains in hard drive storage space, and the addition of flash memory cards in digital devices, have all made it possible to store large digital video files.

In addition to improvements in general computing capacity, the emergence of video production as a ubiquitous communication medium has been aided by the development of user-friendly video editing software, available on both Mac and PC computing platforms. On the Apple Macintosh operation system (Mac OS), the baseline video editor is iMovie, noted for its intuitive design, and being readily accessible as a free application since it is generally included with the purchase of new Macs found in the iLife suite of media software tools. At the higher level of Mac production video editor software is Apple's Final Cut X and Adobe Premiere. While both of these editors allow for greater functionality, such as correcting for errors in sound or lighting, or the ability

to combine several layers of video elements used in video composition, these tools require additional more expensive purchases and have a steeper learning curve. On the PC operating system (Windows OS), the free, built in PC program is called Windows Movie Maker. Though free and readily accessible, Movie Maker is primarily used for basic video editing tasks, as the software functionality is limited. For higher end video editing tasks, equivalent to those of Final Cut or Adobe Premiere, PC users will often purchase third party software, such as Adobe Premiere, Pinnacle Studio, Sony Vegas, or in the case of professional videographers, Avid DS.

The final technological advancement that has made video production a viable mass communication medium is the availability of relatively inexpensive, portable, digital video-capture devices. Though home movie cameras have been around since the early 20th century in various film based formats, over the past 5-10 years, the advent of flash memory and hard drive based digital camcorders, digital cameras, and more recently, digital video capture equipped mobile devices, such as webcams, cell phones, and tablets, have significantly lowered the barrier to access for most people.

In summary, this access to [mobile] video capture equipment, in concert with inexpensive, faster speed computing, greater storage capacity, intuitive video editing software, and a maturing Web environment that encourages publishing and sharing of video content, are among the greatest factors that have contributed to the technological feasibility of integrating student video projects into teaching (New Media Consortium [NMC] & EDUCAUSE Learning Initiative [ELI], 2008).

In addition to technological advances in computing and Web infrastructure, a gradual evolution in teaching philosophy over the past direction on the part of many

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instructors, exemplified by a willingness to adopt more active, project based learning

approaches have also contributed to media projects in higher education becoming more

mainstream. This change has been advocated by several organizations that have called

on educators to leverage technology in support of student media projects. For example,

the report, *A Global Imperative: The Report of the 21st Century Literacy Summit*,

published by the New Media Consortium (NMC) and co-sponsored by the Lucas

Foundation and Adobe Systems, defines 21st century literacy as "the set of abilities and

skills where aural, visual, and digital literacy overlap" (New Media Consortium, 2005).

Sponsors of the report advocate for greater awareness amongst educators, content

creators, and policy makers in supporting the development of media integrated

curriculum as a means of teaching and providing students the skill sets necessary to

communicate effectively in a "multimodal" 21st century. Similarly, the *2008 Horizon

Report* (New Media Consortium [NMC] & EDUCAUSE Learning Initiative [ELI],

2008) noted that with the advent of low cost, mobile and pocket video capture devices,

instructors have numerous opportunities to integrate student produced video into their

courses, suggesting a range of genres including field data collection, "video papers", in

class video capture, digital storytelling, that allow students to share ideas, and can be

effective in supporting group collaboration. Given the combined advances in Web

infrastructure; advances in computing and storage capacity; availability of inexpensive,

user friendly video creation technology; the increased ubiquity of digital media; and

gradually evolved pedagogy that recognizes the importance of students to developing

media literacy and digital writing skill sets through the integration of student media

projects into curriculum; it is apparent that recognizing the effectiveness of these projects to develop these skill sets is of critical importance.

The question remains, what approach is useful to better understand how students develop these requisite production skill sets and what role (if any) this development process influences their ability and motivation to successfully create the types of media projects that are increasingly being integrated into college curriculum? To examine this question, this study was grounded in social cognitive theory and the construct of self-efficacy.

According to social cognitive theory, developed by Albert Bandura (1986), posits that neither previous experience (i.e., trial and experience) nor environment alone adequately explain human behavior. Rather, there is interplay between both personal cognitive experience, environmental factors and behavior which influences how a person will act in a given situation. This balance is self-regulated by an internal system that is shaped and shapes one's self-efficacy beliefs. This construct suggests to the extent of one's belief that they can control a positive outcome will result in a greater incentive to act in specific situations (Bandura, 1993). Those who have a higher self-efficacy tend to "visualize success scenarios", while those with a lower self-efficacy are more likely to "visualize failure scenarios" (Bandura, 1993). High and low levels of self-efficacy beliefs have been strongly correlated to performance in several domains, including academic outcomes (Multon, Brown, & Lent, 1991), academic motivation (Schunk, 1985), and group cooperation (Wang & Lin, 2006, Cheng, Lam & Chan, 2008).

To better understand the relationship between social cognitive theory, self-efficacy beliefs and student produced media skill sets, this study examined a course that

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successfully leveraged media production technologies with digital writing pedagogy by requiring first year college students to each document their investigation of water-related sustainability issues in a digital story project, through the combined use of text, still photos, video, audio and graphics to communicate their thoughts.

The primary research question of this study is:

1. To what extent does the digital story project impact self-efficacy beliefs on media production capabilities in first year college students?

A secondary research question inquires:

2. Where do first year college students seek access to media production resources and support?

CHAPTER 2: LITERATURE REVIEW

Student Media Projects

There has been some general models put forth describing the benefits and skill set needs of learning with digital media in the classroom, both in general digital media usage and the student media project contexts. Notably, Andrew Churches applied classroom student use of technology under a new model he termed, *Bloom's Digital Taxonomy,* to "account for the new behaviours, actions and learning opportunities emerging as technology advances and becomes more ubiquitous" (2009). Per Churches, Bloom's Digital Taxonomy was based off of Bloom's Revised Taxonomy (Fig. 2) developed by Lorin Anderson and David Krathwohl, which itself was a refinement of Bloom's original Taxonomy (Fig. 1), a classification system that proposed that learning classified cognitive, affective, or psychomotor domains. For the purposes of this study

and paper, the key contribution from Anderson and Krathwohl in Bloom's Revised

Taxonomy was an emphasis on creation, with the addition of "Creating" positioned as

the highest order of thinking skills.
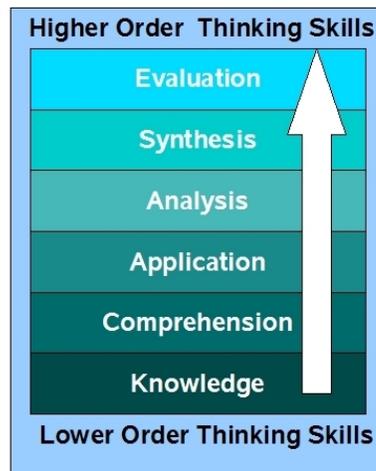
Figure 1. Bloom's Taxonomy (Churches, 2009)
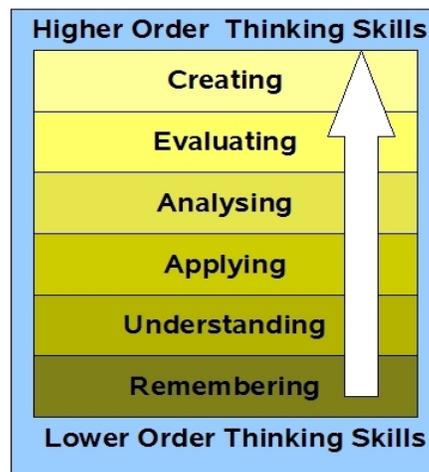
Figure 2. Bloom's Revised Taxonomy by Anderson and Krathwohl (Churches, 2009)

Churches was inspired to apply digital media classroom usage to Bloom's

Taxonomy, as he suggested that both the original Bloom's Taxonomy and Bloom's

Revised Taxonomy of Anderson and Krathwohl were overly focused on the cognitive

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domain, and failed to account for classroom activities, specifically in the context of the

tools and teaching methods afforded from the digital media environment that has

developed today (2009). Churches accomplished this by creating a taxonomy map that

linked key terms to student tasks and soft skill set development (2009) (Fig. 3).
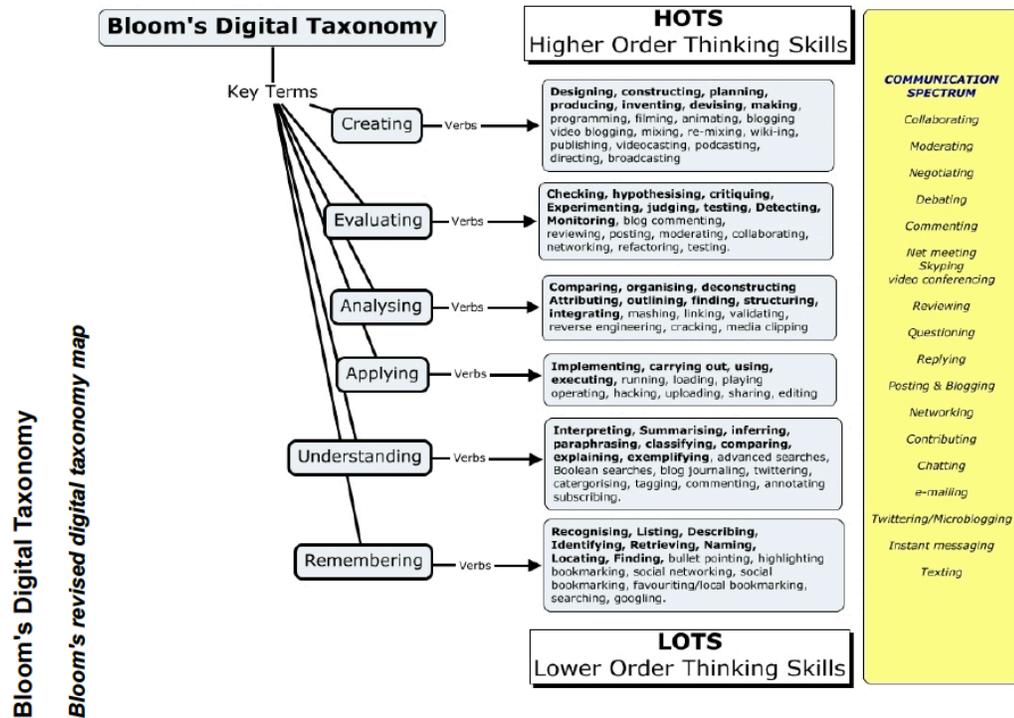
Figure 3. Bloom's Digital Taxonomy by Churches (Churches, 2009)

Millet, Frank, Miller, Wetzel, and Perry (2008) also applied digital media to

Bloom's Revised Taxonomy, with an emphasis on student produced media, citing

thinking skills domains of "Understanding", "Applying", "Evaluating", and "Creating"

(Figs. 4, 5, 6, & 7).
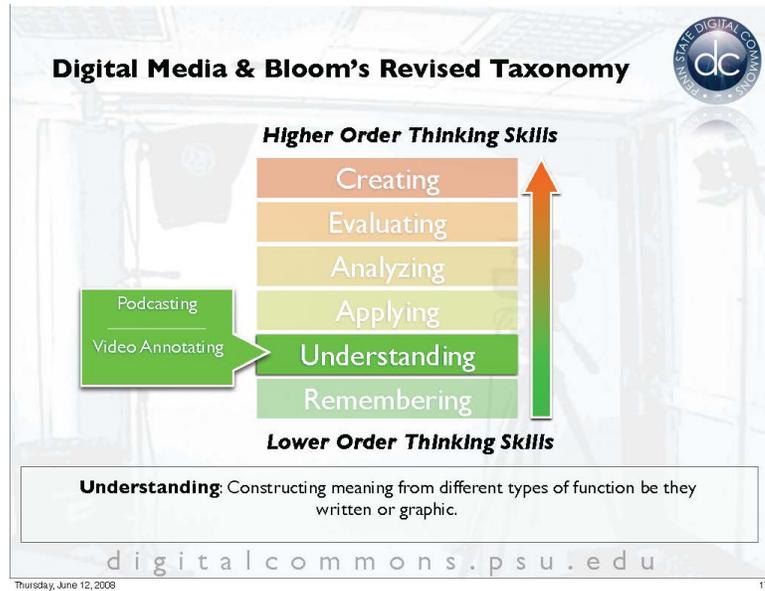
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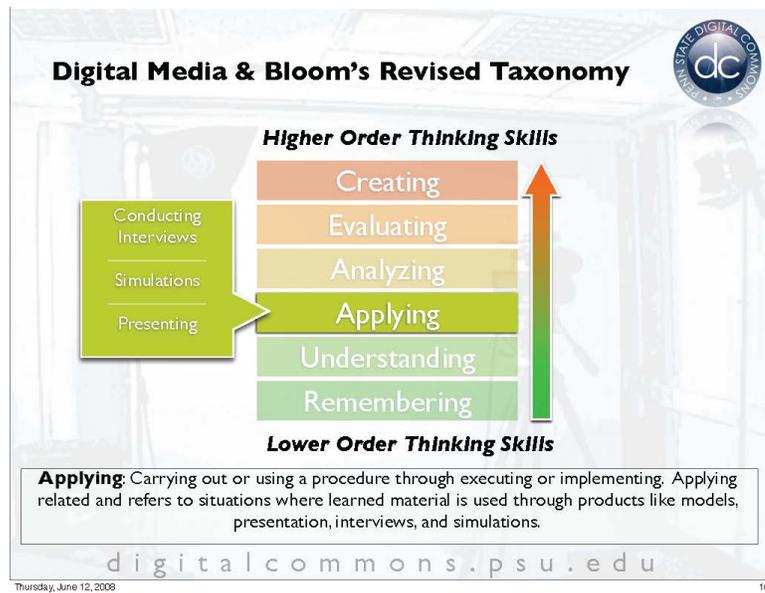
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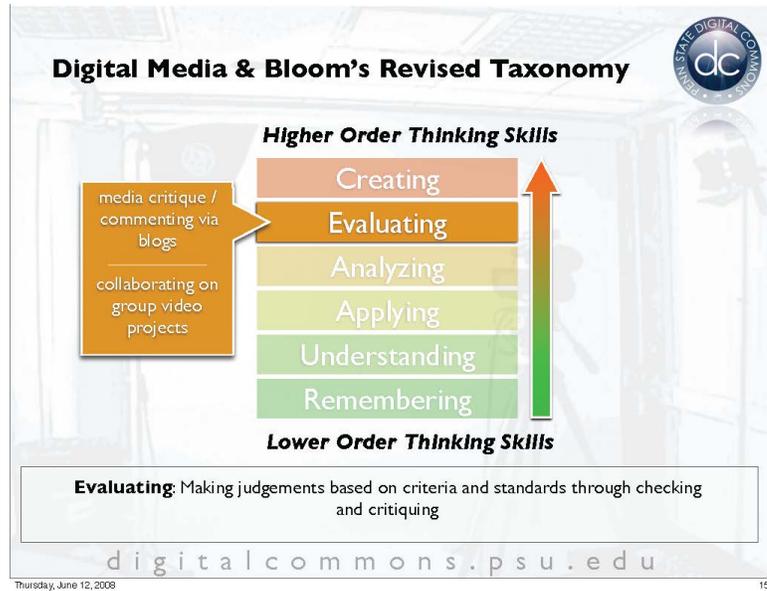
Figure 6. Bloom's Revised Taxonomy student media-"Evaluating" (Millet, et. al., 2008)
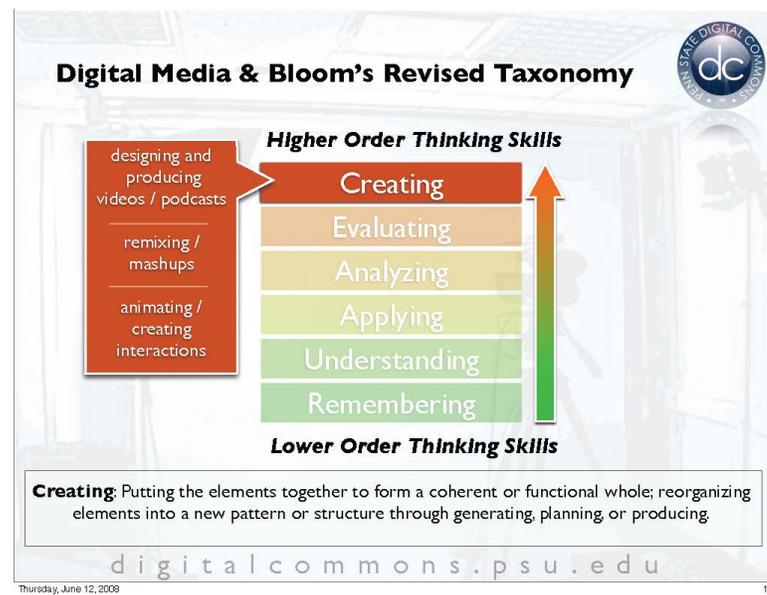
Figure 7. Bloom's Revised Taxonomy student media –"Creating" (Millet, et. al., 2008)

Churches and Millet, et. al. application of Bloom's Revised Taxonomy and digital media has been reinforced elsewhere in the literature. For example, Jensen, Mattheis, and Johnson (2012) found that first year college students producing public

service announcements (PSA) for an interdisciplinary course on food and nutrition, was effective in fostering group member accountability and responsibility, as well as appreciation of differences evidenced by listening and supporting one another and negotiating the quality of the final video project. This process is indicative of a strong "Evaluating" domain from Bloom's Revised Taxonomy and digital media. Jensen, et. al., also found that the PSA projects were effective in helping students develop communication skill sets, through the production process of initially articulating their targeted audience, developing a storyboard, and demonstrated by the students' acting ability appropriate for conveying the group's chosen nutrition themed message. This process described from start to finish exemplifies the domain of "Creating", the highest order of Bloom's Revised Taxonomy. Similarly, students in a college business class created supplemental course *podcasts*, an audio or video ("vodcast") series of streaming media content, which was found to successfully support their understanding of course material (Frydenberg, 2006). This is indicative of the "Understanding" domain of Bloom's Revised Taxonomy, whereby students construct meaning of subject knowledge through the use of multiple modalities.

In further support of the benefits of media projects, Lee, et. al., (2008) found deep collaborative engagement evidenced in a group of volunteer undergraduate college students creating supplemental subject podcasts for campus courses. Finally, Bruce (2008) found that lower achieving high school sophomore students in his Communications course, demonstrated greater engagement, ownership, and exhibited "complex composition strategies" through the production of a music video.

Digital Storytelling

Within the diverse spectrum of student produced digital media works for education, this study examined the specific genre of student produced digital storytelling (DST). The DST movement has some of its earliest roots in the early 1990's with the founding of the Center for Digital Storytelling, based in the San Francisco – Bay Area ("Center for Digital Storytelling", n.d.). The Center taught workshops on how to create a compelling short film through the use of combining still images/photographs, moving images, narrative writing, and music. Notably, this process did not require a great deal of technical knowledge, nor access to advanced computing in order to produce these films. Over the past two decades, this genre has gradually been transferred to the classroom. The University of Houston, College of Education, Digital Storytelling website describes a typical educational application of DST:

> "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. However, as the name implies, digital stories usually contain some mixture of computer-based images, text, recorded audio narration, video clips and/or music. Digital stories can vary in length, but most of the stories used in education typically last between two and ten minutes. The topics that are used in Digital Storytelling range from personal tales to the recounting of historical events, from exploring life in one's own community to the search for life in other corners of the universe, and literally, everything in between." ("The educational uses," 2011)

As Kemker notes, much of the student benefits of DST in education derives not necessarily from the use of the tools of computer technology, but rather the critical thinking skills that develop as a result of the process students go through to create their

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stories. The basics of this process generally includes a pre-production phase from storyboarding on paper, shooting film in a production phase, and finally, mixing in video, images, audio, and text to compose their narrative while editing in a post-production phase (as cited in Howland, Jonassen, & Marra, 2011, p. 225). Kemker suggests the impact of creating and screening these productions in class can be powerful, with the secret to success being the ways in which the stories are constructed (p. 227).

Numerous examples of specific benefits of digital storytelling in educational contexts have been documented. For example, in an effort to help develop cultural sensitivity in an undergraduate course on educational foundations and multicultural foundations, 77 pre-service teachers produced a digital story describing their own culture and presented it to the class. A qualitative analysis of subsequent student written feedback on the activity found that the process of producing and screening the DST was effective in helping the students recognize commonalities and differences between their own cultures, evidenced by the students overall increase in cultural awareness (Theodore & Afoláyan, 2010). The DST medium has also been found to be an effective tool in communicating issues of race, identity, and educational experience in an ethnographic study of high school students (Rolón-Dow, 2011).

Beyond communicating experience of identity, DST has been successfully implemented in support of improving English as a Second Language (ESL) skill set development in college undergraduates (Ya-Ting & Wan-Chi, 2012) and Middle School students (Rosalia & Artigliere, 2012), effective in teaching high school trigonometry math (Goul & Schmidt, 2010), and effective as a reflection tool on learning in undergraduate medical education (Sandars and Murray, 2009).

Though digital stories have been found to be effective in subject knowledge and soft skill set development, there is a gap in the literature on the impact of digital stories (or even student produced media more broadly) in supporting the development of student media production skill sets vital for effective *digital writing*, a necessary component to achieving greater media literacy.

Student Production Support Resource Preferences

A secondary research question from this study examines the preferences for undergraduate students in accessing media production resources and production support for their media projects, particularly with respect to students producing media projects in non-media intensive course disciplines. Given that media production, and video production in particular, requires access to some form of video capture equipment, multimedia software and computing, storage space, a streaming platform, and often related media production support, understanding how to support these projects is a critical questions for both instructors and institutions. Unfortunately, there is limited literature that documents college students' preferences for receiving production support, but there is some evidence that demand for these services has increased over time through reporting from centralized campus media centers.

For example, according to Cox, as far back as 2004 when the University of Alabama first opened the Sanford Media Resource Center (R&D), a library sponsored media center focused on serving students, the site witnessed a 40% increase in individual and group instruction over their first 18 months. In response, the R&D team developed custom online modules to help scale demand for in-person support and focused attention to formalized outreach to faculty and specific courses (Cox & Hawkins, Fall

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2005/Winter 2006). In the same article, Gary Hawkins of the Digital Resource

Laboratory (DRL), a library sponsored media center serving students, staff, and faculty,

at Auburn University, reported a 200% increase in overall space usage between 2005-

2006 and increase in related support needs over that period time. In response, the DRL

likewise reported a plan at that time to produce a series of online tutorials to encourage

self-support for production.

Social Cognitive Theory

This study is grounded in social cognitive theory and the construct of self-

efficacy belief. Social cognitive theory was developed by Albert Bandura and

articulated in his book, *Social Foundations of Thought and Action: A Social Cognitive*

Theory (1986). In response to earlier explanations of human behavior, such as the

Psychodynamic approach (e.g., Freud), which attributed behavior to the individual

subconscious, or the Behaviorism approach (e.g., Skinner), which attributed behavior to

external environmental factors; Bandura posits that human behavior results from an

ongoing interplay of both personal and environmental factors with behavior. In social

cognitive theory this is a reciprocal relationship, not a one-way relationship, as

alternative psychological approaches have suggested (Bandura, 1997 pp. 5-6). Bandura

termed this interplay as *triadic reciprocal causation* (fig. 8).
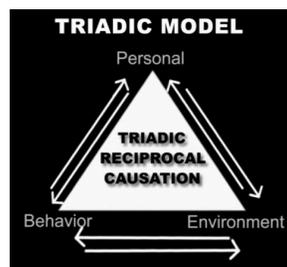
Figure 8. "Triadic Model of Social Cognitive Theory" (Davidson, 2003)

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Social cognitive theory posits that people are both products and producers of their environment that impacts and is impacted by personal characteristics made up of factors such as our social, adaptive change abilities, knowledge, beliefs, values, and biological considerations (Bandura, 1986). These factors are also influenced by other personal characteristics such as race, age, ethnicity, and thus behavioral decisions may evolve differently even when other factors are the same between two individuals.

This behavioral decision process is facilitated by an internal self-regulatory system that mediates all of these variables and is shaped by and shapes our self-efficacy beliefs to exercise control in a given situation, which can have a positive or negative response. Further, social cognitive theory holds that self-regulation is important to individual development that includes a process of social "modeling" or observational learning. There are four stages to describe how observational learning impacts behavior:

1) Attention – paying attention to modeling of significant events

2) Symbolic representation – translating events into conception to recognize and remember

3) Transformation to action – ability to physically/emotionally convert concepts into action

4) Motivational incentive – motivational need to put this action into practice

The observational learning component of social cognitive theory reinforces the idea that learned behavior and action decisions are not merely a function of resident skill sets and previous experience (i.e., trial and error). The concept of observational learning builds off of Bandura's earlier work in the area of social learning theory, articulated in his book, *Social Learning Theory* (1977).

Self-Efficacy

Bandura defines the construct of *perceived self-efficacy,* as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3). Self-efficacy is core to social cognitive theory because it explains the importance of how humans have the ability to exercise some control over their lives, influence events, and shape the course of pursuits, which are heavily informed by the nature of their beliefs in these areas. In general, Bandura posits that self-efficacy is at the foundation of human motivation and successful attainment, because after all unless people feel they have some agency of control to produce an outcome from their actions, they will have little incentive to act or persevere when faced with challenges (Bandura, 1997). Accordingly, those with higher self-efficacy tend to have higher motivation and goal attainment, while those with lower self-efficacy beliefs tend to have lower motivation and goal attainment (Bandura, 1993).

There are four factors that affect the development of self-efficacy beliefs (Bandura, 1997):

1) Enactive mastery experience – actual experiences of mastering a domain is the most important factor for achieving high self-efficacy. Successful experiences generally raises self-efficacy, failure lowers self-efficacy.

2) Modeling – though not as powerful as mastery experience, people's self-efficacy beliefs are affected by watching other's experience. If they are successful, one's self-efficacy belief to succeed in a similar situation increases, if they are not the self-efficacy belief is lowered. As described above in the discussion of personal characteristics, the extent to which

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observed behavior affects our self-efficacy beliefs is influenced by how well they relate to the model being viewed and thus envision themselves in that situation.

3) Social persuasion – encouragement and discouragement from others affects self-efficacy beliefs. Generally, discouragement has a greater impact on lowering self-efficacy than encouragement has on raising it.

4) Physical/emotional factors – factors of physical/emotional states of being such as stress, fatigue and depression can lower self-efficacy. Therefore, those able to better read and manage these states better understand their capabilities and are likely to have a higher self-efficacy in a given situation.

Social Cognitive Theory, Self-Efficacy, and Digital Story Impact on Production Skill Sets

This study is grounded in social cognitive theory and the construct of self-efficacy for a multitude of reasons. First, because this study examines the impact of a digital story project on the development of student production skill sets, it was imperative to identify an established mode of measuring student production skill set attainment. Self-efficacy is a task based construct that differs by level of perceived capability to achieve results in a given situation, from which the respondent considers the demand of the domain specific task being asked (Bandura, 1997, pp. 42-43).

Self-efficacy responses on tasks have been found to correlate positively in many academic situations. For example, Collins studied children who were identified as having ability in low, middle, and high levels were asked to judge their self-efficacy beliefs in Math. They were then given problems at varying levels. Collins found that the students with higher reported self-efficacy beliefs solved more problems, persevered

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upon failure (i.e., reworked problems), more quickly identified appropriate strategies for solving the problem, and solved the problems more accurately than the students who reported lower self-efficacy (as cited in Bandura, 1997, pp. 214-215). Pintrich and de Groot (1990) found that self-efficacy beliefs correlated positively with cognitive strategies, self-regulating behavior, and performance amongst 173 students in eight science and seven English courses. Further, those who had reported high self-efficacy beliefs obtained higher grades, better performance on seatwork and homework, essays, quizzes and reports. Finally, Pajares and Johnson (1996) found that student reported writing self-efficacy and previously assessed writing samples correlated strongly with performance in a group of 181 ninth grade students.

Beyond capturing skill set attainment, this study also seeks to begin to also capture the nature of how these skill sets are developed within the context of the media production process. For example, one facet to consider in examining skill set development is perseverance in the face of challenges. The production of a digital story requires students, who are often unfamiliar with the medium, to quickly develop composition and technical skills across a number of domains (e.g., scripting, video capture/editing, voice over, digital images, etc..). Further, the technical process of actually capturing video and audio, then editing, exporting and uploading to a streaming server is fraught with potential challenges that may or may not be the result of a student's actions. When students are confronted with these challenges, in classes that may not even be media intensive, what motivates them to persevere, sometimes for hours? Because high self-efficacy beliefs have also been found to correlate highly with student motivation and perseverance (Pintrich & De Groot, 1990; Collins, 1982), the

self-efficacy construct is particularly useful in potentially understanding this nature better.

This study is also grounded in social cognitive theory because the researcher suspects that there are likely facets of both personal experience and external environments that contribute to student's process of acquiring skill sets and perseverance through to successful completion of the assignment. For example, given that producing digital stories in the classroom context is a social experience, the researcher hypothesizes that there is likely a social aspect that affects this process. Social cognitive theory will help explain this relationship, and add breadth to the study beyond skill set acquisition.

Unfortunately, the literature is currently lacking in research examining the relationship between social cognitive theory, the construct of self-efficacy beliefs, and the development of student produced technical skills in students producing course media projects.

Therefore, the primary research question of this study is:

1. To what extent does the digital story project impact self-efficacy beliefs on media production capabilities in first year college students?

A secondary research question inquires:

2. Where do first year college students seek access to media production resources and support?

CHAPTER 3: THE METHODOLOGY

Participants/Setting

This study setting took place in a college classroom during the 2010 fall semester. The course was offered through a postsecondary education department, a department that specializes in research on innovative approaches to teaching and learning in higher education. The course was designated as an elective and "writing intensive", with the primary subject matter focused on the topic of water resources and environmental sciences. This course was composed of 13 first year students, 12 of which fully participated in the study. A 13th student responded to the post-survey only, and as a result their responses were excluded from the study. The genders of the respondents were evenly distributed between 6 males and 6 females. As an elective, this course was open to the entire campus. Accordingly, the subjects represented a diverse range of reported intended majors, including Chemistry/Pre-Medicine, Elementary Education, Early Childhood Development, Architecture, Sports Marketing, Finance, Biology (two students) and four students who reported as "undecided". Finally, the instructor is a veteran teacher of the institution, with research interests in writing, environmental sustainability, and multiple modes of communication.

The researcher had previously worked with this instructor to provide media production support in his role as a professional media librarian employed by the library system of the institution. The researcher contacted the instructor prior to the beginning of the semester to discuss the possibility of having their students participate in this study and continued to coordinate the study logistics through the second month of the semester. Beyond this established relationship, this course was also chosen, as was one of the few courses integrating student media projects that required each student to produce their own project from start to end. Therefore, this project provided an

opportunity to more accurately measure the impact of the project on individual student

production skill sets and use of support resources, measures that would be difficult to

determine within a group project setting.

Materials

The course project was a final capstone, requiring students to communicate an

important issue related to water sustainability in conjunction with a subject expert

interview at a local community, business, government or university, through the medium

of a multimedia digital story. One of the primary learning goals of the assignment was

"to hone your writing, researching, image-making, and analytical abilities in order to

create a multi-dimensional, technologically enriched, educational project" (Appendix B).

The media elements of this project were emphasized in the digital story assignment

document described as "some combination of text, still photos, video, audio, and

graphics."

The instructor initially introduced the capstone digital story assignment at the

middle of the semester. This introduction coincided with a workshop in a computer

lab where the researcher and another media specialist from the courses' host college

met with the students to introduce the digital story genre, provide an overview of the

digital story production process, offer tips for quality production, and an opportunity

for the students to perform some brief hands on video editing exercises in iMovie, a

goal designed to provide the students with very basic exposure to video editing

software. During this workshop, the students were also made aware of the

production support resources available to them on campus, such as the media

program in the library system as well as college specific production resources (i.e.,

the collaborating media specialist suggested availability for some student support as well). The introduction of this assignment was intentionally delayed as a final media capstone project. This was because the project was the final assignment as part of a digital writing curriculum progression that began with a traditional written paper followed by an assignment where the students produced a graphical image that represented their thoughts on water.

Procedure

Just prior to the beginning of student work on the project, the researcher met with the class in their main classroom to introduce this study and submit a pre-test project survey questionnaire. The Pre-Test Inventory and Survey Questionnaire consisted of two primary sections: a section that inventoried previous video, image, and audio technical production experience, as well as media project experience (Appendix E) and a Likert scale survey with 13 questions on perceived self-efficacy beliefs in technical production skill sets related to media creation, with many production tasks related to the specific requirements of this assignment (Appendix F).

The purpose of the sections related on specific previous technical video, audio, image production and prior media project experiences was to 1) be able to build context for the study findings and 2) be utilized as a potential metric to measure skill set development by examining correlation between reported types and frequency of technical production tasks and the pre/post response values reported on the Likert scale surveys of perceived self-efficacy production beliefs.

Self-Efficacy Beliefs Survey Questionnaire Scale

The survey section of the Pre-Test Inventory and Survey Questionnaire consisted of 13 questions relating to media production skill set self-efficacy beliefs. The method used was Likert scale, designed in accordance with Bandura's *Guide for Constructing Self-Efficacy Scales* (as cited in Pajares & Urdan, 1986, pp. 307-337). The first priority for designing this scale was to insure that the questions related specifically to media production tasks and experiences. These domains were primary centered around required tasks from the project, but also included some optional tasks as well (e.g., use of tripod and external microphone.).

According to Bandura, an effective self-efficacy scale should be designed to be domain specific, because:

> "*The measure fits all*" approach usually has limited explanatory and predictive value because most of the items in an all-purpose test may have little or no relevance to the domain of functioning. Moreover, in an effort to serve all purposes, items in such a measure are usually cast in general terms divorced from the situational demands and circumstances. This leaves much ambiguity about exactly what is being measured or the level of task and situational demands that must be managed" (p. 307).

This survey was constructed using a 10-point Likert response scale asking the students to gauge their self-efficacy beliefs on their abilities to perform specific tasks on a low-moderate-high scale, with 0 representing "Cannot do at all", 5 representing "Moderately can do", and 10 representing "Highly certain can do." Bandura suggests that developers of self-efficacy response scales should avoid using fewer steps due to their lack of sensitivity and reliability as a result of individual tendency to avoid extreme response (p. 312). Instead, he suggests that

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using a 100-point scale with 10 steps measured in 10 unit increments, but that a simpler response format of the 10-point scale keeps the same structure and descriptors.

The self-efficacy survey-questionnaire section breakdown of production domains included, a question on the general digital project story, two questions on video equipment use, two questions related project skill sets (i.e., storyboard and interview prep.), seven questions on the post-production process of video editing and publishing and one question on managing media file assets (fig. 8).

Table 1. Survey Questionnaire of perceived self-efficacy beliefs on production skills

Video project type	Confidence
1. Create a quality 5-7 minute video digital story?	_____
Learning project type	
2. Develop a quality outline or storyboard for my project by the deadline?	_____
3. Prepare for a quality interview, including background research and question writing?	_____
Equipment use	
4. Use a tripod to produce video that is more still?	_____
5. Use an external microphone to produce higher quality sound?	_____
Video editing software use	
6. Transfer video clips from the camera to video editing software?	_____
7. Delete, split, and move video clips to my digital story using video editing software?	_____

8. Add a voice-over narration and sync audio to the video using a video editor?	_____
9. Add a music clip and sync the music to my video using a video editor?	_____
10. Add a title to my video?	_____
11. Add an image to my video?	_____
12. Store and backup my project files (video, images, audio)?	_____
13. Upload a video to a streaming service?	____

During the administration of the pre-test, the researcher provided the students with a brief overview of each section, including specific instructions in the self-efficacy survey section to respond according to their *current*, not future, beliefs on their media production skills. These instructions were conducted in accordance with the *Guidelines for Constructing Self-Efficacy Scales* recommended survey application in order to properly prepare the students mindset in judging their current operative abilities, as perceived hypothetical future level of efficaciousness could easily be misjudged (p. 313).

After the students had concluded their projects, the researcher returned to the class to screen the videos with the class and administered the Post-Test Inventory and Survey Questionnaire. The pre and post test versions of the media production Inventory and Survey Questionnaire were very similar with the "prior audio, video, image production experience", "media project experience", and "self-efficacy survey" sections having identical questions. The post-test also included an additional section open ended section for students to offer their thoughts on why they believed their skill sets had (Appendix G) changed or not during this project. This section was initially added as a

potential strategy to capture context on the student experience, in the absence of a focus group interview. However, the responses were descriptive and a focus group interview was subsequently conducted with three of the students the following semester to provide richer context. Therefore, responses from this section were not included in the data analysis. To measure whether there is a significant relationship between perceived self-efficacy beliefs and media production skills sets gained from the digital story production process, student self-efficacy belief responses were paired pre and post-test using a t-test method in SPSS statistical software (ver. 19) and correlated with production related tasks that were either specifically indicated on the assignment document (Appendix B), "Storyboard Assignment" (Appendix C) or "Feedback on Digital Story" (Appendix F); or in the case of survey question #12, (i.e., "store and backup media project files"), is a task that is closely related to the assignment requirements of gathering multiple materials and is a practical production process function for project completion.

The hypothesis for the Survey Questionnaire is that student self-efficacy belief responses for the documented (or process functional) project related production tasks will be shown to be statistically significant at least a $p<.05$ value (i.e., reject the null hypothesis in favor of the alternative), while the two self-efficacy questions responses related to non-required, non-documented, media production tasks (i.e., question #4 and #5) will be found to not be statistically significant.

Table 2. Relationship between assignment tasks and related production domains on Self-Efficacy Survey Questionnaire

Assignment Task	Self-Efficacy Question
• Create a digital story.	• 1. Create a quality 5-7 minute

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(Assignment document)	video digital story?
• Create a storyboard. (assignment document)	• 2. Develop a quality outline or storyboard for my project by the deadline?
• Talk with someone from the group. (assignment document)	• 3. Prepare for a quality interview, including background research and question writing?
• Visual Engagement: Quality of photos and video clips and use of graphs and other visual effects? ("Feedback on Digital Story Draft" form)	• 6. Transfer video clips from the camera to video editing software? • 7. Delete, split, and move video clips to my digital story using video editing software? • 10. Add a title to my video? • 11. Add an image to my video?
• Audio: How effective is the audio if it were listened to separate from the visual shots and the text? How are the transitions from music to voiceover to interview? ("Feedback on Digital Story Draft" form)	• 8. Add a voice-over narration and sync audio to the video using a video editor? • 9. Add a music clip and sync the music to my video using a video editor?
• Learn how to incorporate field notes, research, and images into a well-crafted story designed for the public. (assignment document)	• 12. Store and backup my project files (video, images, audio)?
• The story must be able to be accessed via a link, such as through YouTube or the University's Media Mill. (assignment document)	• 13. Upload a video to a streaming service?

In addition to the added section on student response to changes in their self-efficacy beliefs on production tasks, the post-test also included a section requesting students' feedback on their experiences in accessing media production resources and support for their digital story projects (Appendix H). This data is important in addressing the study's secondary research question on student production support preferences. Finally, demographic questions were also included at the end of the post-test, including questions on college status, gender, and perspective major.

Semi-Structured Focus Group Interview

In order to establish greater context in understanding student experience and production skill set development with respect to these digital stories, a 90 minute follow up focus group interview was conducted in the spring with three students from the fall class. This focus group was structured using a series of semi-structured questions constructed with the aid of the "Interview Guide" section of *Qualitative Evaluation and Research Methods* (Patton, 1990, pp. 283-284) (Appendix J).

Researcher's Role/Background

The researcher is currently an M.A. student in the Learning Technologies program of the Curriculum and Instruction Department of the College of Education and Early Development at the University of Minnesota. The researcher also serves as the

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Media Outreach and Learning Spaces Librarian (Assistant Librarian rank), and functions as head of Library Media Services, a program of the University of Minnesota Libraries designed towards supporting an array of campus media services, including the integration of media resources and student produced media projects into campus course curriculum. In this capacity, the researcher works with faculty members to help encourage the effective development of student media assignments, provides custom in-class outreach instruction on media production, and provides broad oversight of two campus media lab spaces, "SMART Learning Commons", where students have access to production equipment, specialized production computing, and quality media production support. Prior to this appointment, the researcher served for two years with the Libraries in the staff role of Multimedia Consultant, including responsibility for providing direct production support to students and overseeing daily operation of the SMART Learning Commons.

The researcher holds a Masters in Library and Information Science (M.L.I.S) with an undergraduate degree in Child Psychology, and has previous served as an educational technologist and after school program teacher in an early childhood environment. As stated earlier, in this professional capacity, the researcher has worked with the instructor and students (often in concert with campus partners) to support the creation of the water digital stories.

The researcher developed the study, initially in collaboration with his advisor, and implemented the study alone. Outside of a co-taught workshop a few weeks prior, the researcher had no relationship with the students in advance of administering the pre-test, post-test, and follow up focus group interview with four students.

Potential Risks and Benefits

The potential risks for this study were deemed small by the campus Institutional Review Board (IRB), consent from which was submitted and approved at the beginning of the fall semester. Upon administration of the pre and post survey questionnaires students were advised of the study and provided informed consent on their right to forgo participation to any or all of the study at no penalty. Further, student responses were given anonymously, with only a student reported birthdate used as the pre-post test identifier for matching purposes (Appendix A).

There are several potential benefits of this study to the participants. For example, given that course integration of student produced media is still a developing pedagogical technique, particularly in higher education, the instructor could benefit from gaining greater insight into the value of their digital story on student production skill set development. The host department for the course is also well known for its research in the integration of innovative post secondary teaching practices, including student media assignments, and would likely benefit from having a better understanding of the affordances of these projects in preparing students with the skills to be able to communicate through multimedia. Finally, the university benefits from this information, as they have developed Student Learning and Development Outcomes that include components related to demonstrating effective communication skill sets.

CHAPTER 4: ANALYSIS OF THE DATA

Responses from the Survey Questionnaire were entered into the SPSS statistical software (ver. 19), and a pre-post, paired samples, t-test was run. The cumulative results indicate a positive mean score gain within every question from pre and post test responses (Table 3).

Table 3. Mean score changes of perceived self-efficacy production beliefs pre/post test

Survey Question	Pre-Test Mean/ Std. Deviation	Post-Test Mean/ Std. Deviation	Δ
1. Create a quality 3-5 minute video digital story?	6.00 2.449 (sd)	9.83 0.389 (sd)	+3.83
2. Develop an outline or storyboard for my project by the deadline?	6.25 2.301 (sd)	9.08 1.564 (sd)	+2.83
3. Prepare for a quality interview, including background research and question writing?	6.92 2.678 (sd)	9.50 0.798 (sd)	+2.58
4. Use a tripod to produce video that is more still?	6.58 2.644 (sd)	7.58 2.314 (sd)	+1.00
5. Use an external microphone to produce higher quality sound?	5.83 2.209 (sd)	7.08 2.065 (sd)	+1.25
6. Transfer video clips from the camera to video editing software?	7.00 2.730 (sd)	9.83 0.577 (sd)	+2.83
7. Delete, split, and move video clips to my digital story using video editing software?	6.50 2.393 (sd)	9.83 0.389 (sd)	+3.33
8. Add a voice-over narration and sync audio to the video using a video editor?	5.42 2.610 (sd)	8.08 2.610 (sd)	+2.66
9. Add a music clip and sync audio to my video using a video editor?	6.00 2.412 (sd)	9.25 1.765 (sd)	+3.25
10. Add a title to my video?	8.58 1.676 (sd	10.00 0.000 (sd)	+1.42
11. Add an image to my video?	8.17 1.801 (sd)	9.92 0.289 (sd)	+1.75

Survey Question	Pre-Test Mean/ Std. Deviation	Post-Test Mean/ Std. Deviation	df	t
12. Organize and backup my project files (e.g., video, images, audio)?	6.64 2.873 (sd)	9.00 1.265 (sd)	+2.36	
13. Upload my video to a streaming service?	5.75 3.166 (sd)	9.25 0.965 (sd)	+3.5	
Note: N=11, except question: N=10; Δ=change in mean score				

Table 4. Media Production Self-Efficacy Survey Questionnaire Results (Paired Samples)

Survey Question	Pre-Test Mean/ Std. Deviation	Post-Test Mean/ Std. Deviation	df	t
1. Create a quality 3-5 minute video digital story?	6.00 2.449 (sd)	9.83 0.389 (sd)	11	-5.453***
2. Develop an outline or storyboard for my project by the deadline?	6.25 2.301 (sd)	9.08 1.564 (sd)	11	-3.742**
3. Prepare for a quality interview, including background research and question writing?	6.92 2.678 (sd)	9.50 0.798 (sd)	11	-3.221**
4. Use a tripod to produce video that is more still?	6.58 2.644 (sd)	7.58 2.314 (sd)	11	-0.886
5. Use an external microphone to produce higher quality sound?	5.83 2.209 (sd)	7.08 2.065 (sd)	11	-1.546
6. Transfer video clips from the camera to video editing software?	7.00 2.730 (sd)	9.83 0.577 (sd)	11	-3.602**
7. Delete, split, and move video clips to my digital story using video editing software?	6.50 2.393 (sd)	9.83 0.389 (sd)	11	-4.493**
8. Add a voice-over narration and sync audio to the video using a video editor?	5.42 2.610 (sd)	8.08 2.610 (sd)	11	-2.583*
9. Add a music clip and sync audio to my video using a video editor?	6.00 2.412 (sd)	9.25 1.765 (sd)	11	-3.493**
10. Add a title to my video?	8.58 1.676 (sd	10.00 0.000 (sd)	11	-2.927*
11. Add an image to my video?	8.17 1.801 (sd)	9.92 0.289 (sd)	11	-3.339**

12. Organize and backup my project files (e.g., video, images, audio)?	6.64 2.873 (sd)	9.00 1.265 (sd)	10	-2.951*
13. Upload my video to a streaming service?	5.75 3.166 (sd)	9.25 0.965 (sd)	11	-4.251**
Note: df = degrees of freedom (N-1); t=paired t-test; *p<.05; **p<.01; ***p<.001				

Statistically significant correlations between student responses and digital story assignment production tasks were found at the p<.05 level for questions #8, #10 and #12; at the p<.01 level for questions #2, #3, #6, #7, #9, #11, and #13; and at the p<.001 level for question #1, ("Create a quality 3-5 minute video digital story?"). Questions #4 ("Use a tripod to produce video that is more still?") and #5 ("Use an external microphone to produce higher quality sound?") were found to be not statistically significant (Table 4).

Production Support Resource Preferences

Table 5. Student Production Support Resource Preferences

Survey Question	Response Summary
Use of SMART Video Camera	1
Use of SMART Tripod	2
Use of Prof. Camera	2
Use of Prof. Tripod	1
Use of Camera (unidentified campus service)	1
Use of External Mic (unidentified campus service)	1
Use of Mac (unidentified campus service)	1
Use of iMovie (unidentified campus service)	1
Support from other media	• Media Mill (college media specialist).

professionals	• "Help uploading Media Mill. Teacher lent me a camera for my interview and also gave instructions on how to upload to Media Mill." • "getting the sound levels right" (College media specialist). • "Email instructions from my professor." (unspecified support)
Please feel free to share any other comments related to your experience producing media	• "I am not a fan of Media Mill. YouTube is simpler and would make the videos available to a broader audience." • "I could have used more help from SMART, but was too late to get some – it would help to know how far in advance to request equipment." • "I used my friends that have made video before to help me better my video."

In the post-test survey, students were asked a series of questions related to production equipment and support preferences on their digital stories (Appendix H). Note: This summary of results includes responses from the 13th student who provided a post-test only, as this series of questions was not on the pre-test. Only seven students provided response to any questions regarding their production support preferences (Table 5).

CHAPTER 5: SUMMARY, CONCLUSIONS, LIMITATIONS, RECOMMENDATIONS, IMPLICATIONS

Summary

This study provided a more in-depth insight into the perceived skill set gains on media production processes in first year students producing digital stories on water sustainability.   These insights are evidenced by data results of the pre and post test survey questionnaire that demonstrated strong, statistically significant gains at levels of $p<.05$ or greater, on student perceived self-efficacy beliefs with respect to every required media production task indicated on the assignment documents, with the exception of statistically significant response on the question of media management skills. This is not surprising as media management is a functional skill set of the media production process that all students would have needed to develop in order to effectively complete their digital stories.

In contrast, data from this study also found that the pre and post-test student self-efficacy belief responses were not statistically significantly correlated in the questions related to use of a tripod or external microphone optionally suggested in order to improve the respective quality of audio and visual video capture. Given that these two tasks were merely optional possibilities that were not required, nor indicated on the project support documents, and were not functional requirements to complete the digital story, it is not surprising that less students would have engaged in these experiences, resulting in a smaller sample of students that reported gains in their skill set development self-efficacy beliefs. In terms of measuring perceived self-efficacy, this lack of

statistical significance does not imply necessarily that the students did not gain any

confidence in their beliefs of their abilities to effectively use this equipment, but rather

that it is difficult to accurately assess these self-efficacy beliefs for new experiences. As

Bandura suggests, "in new undertaking people have insufficient experience to assess the

veridicality of their self-appraisals and hence must infer their performance capabilities

from knowledge of what they can do in other situations, which may be misleading (1986,

p. 398)."

Response data to the study's secondary research question examining student

preferences for production support resources, gathered from an open written response

section on the Post Test Survey Questionnaire, suggests that roughly half of the students

loaned production equipment (i.e., camcorders, tripods) from either the campus library

media program or from the small equipment pool held by the instructor. In terms of

seeking out production support, four students reported receiving additional production

assistance from the college media specialist and one reported receiving support from a

friend. The greatest production challenges reported on the survey were issues with

improving audio quality in their video projects and difficulties uploading their video

projects to the campus streaming video service.

To provide context to these findings, during the spring semester, three students

from the class took part in a follow up focus group interview (Appendix J). The

students' comments suggested a fair amount of trepidation on their media production

skill sets entering the class, but also confidence in their ability to develop these skill sets.

When asked about initial impressions to the media production, Student 1 said, "I was a

little worried about it because I'm not tech savvy…at all. So I thought it was going to be

a major struggle, especially because it was a big part of our grade, so I was not sure how it would turn out. But, it ended up working out OK." Student 1 later added, "I don't think I ever made a video before hand, I made a slide show once with music that's the extent of my video making skills." Asked whether there was a relationship to the slide show creation and video, Student 1 responded, "definitely, because I was using like, I think I was I was using Windows Movie Maker, so it was helpful." Student 2 expressed a decent amount of experience having made home videos prior using Adobe Premier Elements, and put together some videos for their mother on YouTube. For Student 2, the greater concern came from the interview component of the assignment, "I was confident, but I think I'm generally a confident person, and I like messing around with computers and technology, but I was a little concerned that it was a big part of our grade and ummm…I never really shot an interview before, so the idea that you have to interview people and put that footage in is a little unnerving." Initial pre-test self-efficacy belief responses on the interview question appeared quite low in the pre-test (6.25). Fortunately, given the t-score gains of 3.74 at a statistical significance of $p<.001$, it appears that the students were able to successfully overcome their initial interview concerns.

This response from Student 2 illustrates that it is possible for students to have a high degree of confidence in one skill set domain of the production process, and significantly less in others when first encountering a media project. Therefore, this response also underscores the critical importance of researching specific individual skill sets related to the variety of production tasks required to accomplish a media assignment, and not to generalize media production as a single domain.

The students also provided some insight into their media production support preferences. Student 3 suggested she borrowed a Flip camera from her mom's fiancé, Student 3 suggested she loaned a camera from the instructor after trying at the last minute to check out a camera from the library media program, only to learn they were all checked out. Student 2 responded that she also had difficulty securing equipment through the library media program and ended up using the video her on her own still camera, with her the webcam on her laptop as a backup. As it happened this footage was required, because as Student 2 was unable to get a tripod from the library program, her friend held the camera and that footage was too shaky for usage.

The students each experienced several post-production challenges, which they worked through differently. For example, Student 1 expressed difficulty using Windows Movie Maker to playback her interview clips as they would cut out, which she worked through on her own after several hours. Student 2 mentioned that they spoke to their mother to get a website for "copyright free" (i.e., Creative Commons) music, and when they were stuck with an issue in iMovie they looked up help or figured out the solution through trial and error. Student 3 described technical difficulty with a visual effect she was attempting that kept causing their computer to freeze, as well as difficulty with the audio not syncing properly with the video, in the PC video editor Adobe Premiere Elements. She was ultimately able to fix this problem through tips received by the college media specialist, but expressed some frustration at the process.

One area where the students expressed overall confidence was with media management. Students can easily lose media assets, or have them corrupted so having a good media project information architecture and backup plan is helpful. In the

interview, Student 1 and Student 3 responded that they were inspired by the workshop advice to back up their raw project files, though Student 2 suggested she did not have the time to back them up outside of to the camera and their computer due to time constraints, but nonetheless suggested she was mindful of the need.

Conclusions

All students were successful in completing their media projects by the assigned due date. Results from the study and follow up focus group clearly suggest that when students are required to add certain media components to their digital story projects they develop the necessary production skills to complete the task. This is supported by strong gains in pre and post-test responses on perceived self-efficacy beliefs in domain related tasks. The follow up focus group interview also shed some light on some of the initial trepidation going into the project, which ranged from experiencing concern about the entire digital story project, to just certain components of the project, such as recording an interview.

Finally, just as important as what the students learned is how they went about overcoming challenges through out the project. For some, this meant seeking out the assistance of friends, the instructor or media specialists. While others, such as Student 2 preferred to take a more hands on approach, describing her approach to learning media production through out this project:

> "I learned a lot about making movies mostly from everything I did wrong in this project. So I learned how not to do an interview right, how to pick bad locations, do bad cropping, have bad audio, and so by the end of it if I felt like if I had to start over I would have done a much better."

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At least one of the students was able to immediately apply the skill sets they learned

in this project to work:

Student 2 continued:

"And so then over winter break I made videos for my dad's office, and I feel like a lot of the things I did for those videos were off of mistakes I made..Like, I looked at my footage before I left the scene, which is really helpful..and when I was editing it I did a lot of edits differently, and I felt more confident..all good stuff..but it wasn't until yea I was like done with maybe 30 hours of video work that I finally felt like I picked up real skills."

Finally, it was clear from returning to the class for the digital storytelling

screening and the follow up focus group interviews that the overall response to these

digital stories was that of pride. In fact, Student 1 suggested they put in "maybe like 30

hours on the project", Student 2, between "20-30 hours" and Student 3, "I feel like

probably somewhere around 40 or more..I just..I don't know (collective laugh when

reminded the media specialists warned them to prepare)." Reasons cited for this

perseverance in the interview, included admiration for the quality of digital stories

created in the past and with their current peers (some were apparently shared with each

other during production), a certain degree of perfectionism in the production process, and

also a deep admiration for the instructor. This appreciation of the collective production

process experience amongst classmates, admiration for the instructor, and sense of being

part of a continuum of the sustainability digital storytelling project by viewing past

projects, suggests that although the mastery experience is a primary contributing factor

to their high self-efficacy beliefs in production skill sets, there is also likely a strong

social cognitive aspect from this observation that encourages modeling, another of the

four factors contributing to positive self-efficacy beliefs.

Follow up studies that examine influences, such as course social context on the modeling factor of developing self-efficacy beliefs, would be useful to examine the role of some of the specific aspects play in sustaining student engagement and motivation to produce quality digital media projects. If one is to consider student media project a new form of writing, then it is worthwhile to understand the core motivations of what it takes for students to become digitally media literate.

Limitations

It is important to note that this study captures the perceived production skill set abilities of first year students in one class, at one point in time (2010). These results are not intended to be generalized across all contexts, but rather to provide a glimpse into the benefits of student media projects and most of all, the student experience of entering a non-media intensive course and being expected to produce a quality digital story with limited prior media experience.

An initial attempt to capture prior student media experience with specific tools and media projects was attempted through a Student Production Experience Inventory that was a component of the survey/questionnaire on both the pre and post tests (Appendix E). Unfortunately, analysis of the data showed that this was not an effective measurement due to student's inconsistent reporting on prior technical production task experiences and a lack of standard definition on what qualified as the number of times a task was performed. An alternative possible method to capture a more accurate snapshot of student production technical competency would be to have a more hands on evaluation between a technologist and student before and after the digital story process, whereby specific production tasks or media products could be requested by the

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researcher and then evaluated for production skill set ability. Fortunately, the follow up focus group interview with three of the students helped to provide much needed context, and the pre/post Likert questions were sufficient when aligned with the tasks outlined in the digital story assignment to determine impact on technical production skill set development.

There were also limitations in both the process and generality on student production support resources. Only a small sample of the 13 students responded to the post test questionnaire on where they sought support and at what type, therefore, it is difficult to say if this sampling was representative of the entire class. Further, because support options vary greatly by institution, coupled with increasingly ubiquitous availability of user friendly, inexpensive, media production tools it is questionable to what extent the production support preferences from this group can be generalized across the campus at any given time, and certainly across higher education in general. Nonetheless, these responses did provide a glimpse into how students navigate accessing resources, the trade offs they are willing to make between quality and convenience (i.e., cell phone video footage versus a prosumer camcorder checked out from the media center), and to whom they seek support first (i.e., friends, family, instructor, college media specialist, then campus media support). These responses also illustrated the need for increased capacity of campus services, as per follow up focus group student responses; part of the rationale for utilizing less than ideal equipment was that the SMART Learning Commons equipment was checked out that day.

Finally, further factors such as technologies, production support availability, quality of instruction, student respect for the instructor, project expectations, the subject

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matter, and production experience of incoming students all likely impact student motivation, and attainment of production skill sets. They are likewise constantly evolving. Still, as student media projects continue to gain acceptance in the course curriculum, instructors and programs need to continue to refine their understanding of the value of these projects and requisite skill sets. Unfortunately, the literature is still fairly nascent researching aspects of student media production in higher education.

Recommendations

Here are a few recommended areas for future directions of student media production research that would be useful to explore: whether the video project genre makes a difference in student production skill set development (e.g., public service announcement, vodcast, role play versus digital story)? The longevity of technical and project production process skill sets gains until they begin to fade has important ramifications for curriculum development built around media production? To what extent is there a relationship between the length of project deadlines and related scaffolding from the instructor on student attainment of skill sets? To what extent does affinity for the instructor and/or their classmates motivate students to persist on producing a media project that can often take upwards of 20-40 hours to complete? These are just a few areas of important exploration, not currently visible in the research, that could help shed light on the benefits of student media and related requisite skill sets to accomplish these projects.

Implications

There are several potential implications to this research. Given that statistically significant gains in perceived production self-efficacy were evident in every required

production task indicated on the assignment support documents (with the exception of media management which was a functional project requirement), it is fair to suggest that an instructor could potentially assign a follow up digital media assignment with greater expectations on those components that were required in the earlier project.

More broadly, if a student digital media project is particularly suitable towards enhancing learning in a given discipline (as it is in many cases), a college program curriculum committee could consider examining the current course structures and recommending that certain media projects, requiring certain media components and tasks, be integrated at varying levels with heightened production expectations as students progress through the program. Finally, as higher education institutions continue to advance towards student learning accountability for political, pedagogical and accreditation purposes, evidenced by adoption of learning and development outcomes, the course integration of media production as a form of digital writing is likely to become a required form of communication at some point. Having a better understanding of precisely how these projects assist students in developing the technical and production process ability to communicate in this mode, will be benefit all parties involved including the students, instructors, discipline programs, colleges, and institution at large.

To conclude, the digital environment we currently exist in has provided amazing opportunities that require us to continue to develop new skills in order to participate. This study provided some insight into how course integrated digital story projects help to foster the critical development of these skill sets that in some cases at least, have already been reapplied elsewhere to enrich the lives of those who experienced this project.

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Appendix A:
Informed Consent

Title of Project: **Exploring the relationship between previous media production experience to self-efficacy in course integrated digital story video production of first-second year college students.**

Principle Investigator: Scott Spicer, 341 Walter Library, 117 Pleasant Ave. S.E., Minneapolis, MN, 55102
(612) 626-0629   spic0016@umn.edu

Advisor: Charles Miller, PhD. Room 150 Peik Hall, 159 Pillsbury Dr. S.E., Minneapolis,   MN, 55455.
(612) 625-0534   mill1957@umn.edu

Purpose of the Study:
The purpose of this research study is to study what, if any, role prior experience producing media has on student self-efficacy (motivation) to produce a digital video story. A secondary question studies the relationship of this previous experience, self efficacy, and use of library resources.

Procedures to be followed:
You will receive a media production experience inventory sheet. On this sheet, please check whether you have previous experience with each of these media production related tasks and project types, and if so, to what extent. Then on the second sheet, please fill out the survey writing down your current confidence on success for each related question on a scale from 1-10. At the end of the semester, after you have completed your digital stories, you will be given the same inventory/questionnaire with the opportunity to explain why you feel your response may or may not have changed, and any library resources you used along the way.
Please write down the last four digits of your social security at the top of each sheet so I can match up the two surveys/inventories.

Participation in this survey is volunteer, and there will be no penalty for opting out. Your assistance on this study is greatly appreciated, and as these kind of assignments are relatively new for most college students/faculty,https://mail.google.com/a/umn.edu/?AuthEventSource=SSO#search/IRB/12717bafcfdd4ac3 this research will be very helpful to both myself and other instructors/media support people in understanding

Risks:
There are no risks in participating in this research beyond those experienced in everyday life.

Benefits

- This research might provide a better understanding of what factors, such as prior video production experience play in student motivation to produce digital video stories. This information could help instructors and media support staff to improve the development of media assignments and production support for future student projects.

Duration:

This survey will take approximately 15 minutes.

Statement of Confidentiality:

The survey and experience inventory contains no personal identifiable information except the last four digits of your social security in order to match the pre and post-tests. After the post tested is submitted and recorded, even the paper with these four digits will be destroyed. If this research is published, no information that would identify you will be included since your name is in no way linked to your responses.

Right to Ask Questions:

The researcher conducting this study is Scott Spicer. You may ask any questions you have now. If you later have questions, concerns, or complaints about the research please contact Scott Spicer at (612) 626-0629 during the day. The advisor for this project is Charles Miller. If you have any questions, concerns, or complaints he may be reached during the day at (612) 625-0534

If you have questions regarding your rights as a research subject, you may contact The University of Minnesota Office of Human Subjects Protection at (612) 626-5654. You may also call this number with problems, complaints, or concerns about the research. Please call this number if you cannot reach research staff, or you wish to talk with someone who is an informed individual who is independent of the research team.

General information about being a research subject can be found on the Office of Human Subjects Protection website "Information for Research Participants"

Compensation: You will not receive compensation for your participation.

Voluntary Participation: You do not have to participate in this research. You can stop your participation at any time. You may refuse to participate or choose to discontinue participation at any time without losing any benefits to which you are otherwise entitled.

You do not have to answer any questions you do not want to answer.

Appendix B:
Digital Story Assignement
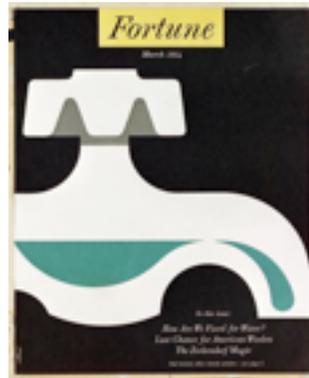
Walter Allner, c.1954
Courtesy of ARTstor

Digital Story
PsTL 1906W – Spring 2010
Instructor - Linda Buturian

A digital story is some combination of text, still photos, video, audio, and graphics. This assignment asks you to create a digital story about your experience visiting a community, business, government, or university organization that is addressing a water-related issue. Once you have researched and decided on a site, you will visit the organization at least once, talk with someone from the group, and document your visit through field notes, photographs or film. This project invites you to write about your experience visiting the organization, while also informing the reader of the critical issues and details they need to know in order to understand the goals as well as the workings of the group. The visual component of this assignment will help you to bring the organization and relevant water issues to life for the audience.

The first step is to think about where your interests lie: Art? Human rights? Weird Weather? Water quality? Working with children? The Mississippi River? Then find a group involved with water issues that relates to your interests. Examples include the Friends of the Mississippi River, a citizen group working to protect the river, or In the Heart of the Beast Puppet Theater, an art and theater collective that chose water as its year long theme. With a digital or video camera in hand, you will visit the site at least once, and take photos and field notes. Then you will create a digital story informing the reader about your experience, providing us with information about the organization, making connections to class, and bringing your own insights and experiences to life through text and images.

The digital story assignment is designed to accommodate students who have never used a camera, as well as students who are comfortable with technology. With the technology in the Peik Hall computer lab and the Smart Learning Commons and Media Services, you can edit and narrate the story, and make videos from the photos you take.

Once your story is completed you will present the project to classmates, who will give you feedback so you can edit and revise your story. From there we will work collaboratively on integrating the stories into a public website informing people about the good work we have accomplished in this seminar. The digital story project culminates with a public premiere of your projects during the last two days of class.

Requirements:

◊   The Story Board answers the questions of who, what, when, where, and why, as well as anticipates what technology you will use and how. The storyboard articulates your main goal for visiting the group, as well as the questions you hope to answer.

◊   The Digital Story should cite all sources (including images borrowed from online sources), and should be 4-7 minutes in length. The story must be able to be accessed via a link, such as through You Tube or the University's Media Mill. Any music, commercial clips, photographs, that are borrowed from other sources must be cited. Research copyright requirements for each source.

◊   Two outside sources will be cited in the story. One of the sources should include quotes from a conversation/interview with someone from the organization, and another one can be a credible source about the organization or about the water-related issue the group is addressing. You can use more sources.

◊   You will take part in peer review of a "draft" of your story, and your peers' stories, and then take part in a premiere of your digital story to the class and invited members of the public.

Learning Goals:
◊   To make contact with an organization and learn to use a person or organization as a source for research.
◊   To learn how to incorporate field notes, research, and images into a well-crafted story designed for the public.
◊   To hone your writing, researching, image-making, and analytical abilities in order to create a multi-dimensional, technologically enriched, educational project.

Deadlines:

April 6: Storyboards due: meet Linda for Individual Conference in 250-D Burton Hall

April 8:   Continue storyboards and individual conferences

April 20:   Interviews should be completed.

Monday, April 26:   Download story to Media Mill and share processed story/link with
Linda

Tuesday, April 27:   Present digital story to classmates for critique/feedback

Thursday, April 29:   Present digital story to classmates for critique/feedback

Tuesday, May 4:   Premiere Digital Stories

Thursday, May 6:   Premiere Digital Stories

Appendix C:
Storyboard Assignment

Storyboard Assignment
For your digital story

A storyboard is essentially a kind of storyline for your project; one th at accounts for the visual nature of the digital story by including eith er sketches or thumbnail photos of the main sections of your story.
Complete a storyboard for your digital story project. On our Moodle site the re is a link to an article by the Knight Digital Media Center on what a storyboard is and how to prepare one.

Consider these issues:

1) Who is your **chosen audience**? Students at the U, or throughout the United States? Residents of Cottage Grove? The General Public? Citizens of China? Golfers? You can choose your audience (with the understanding that your story will be posted on a public website).

2) What **information** does the chosen audience need to know about your topic? (This includes any historical, cultural, statistics, other research, definitions, philosophical–
anything that will help the chosen audience understand the relevant issues. Research the issue related to your story, and if there's an organization involved, have information on the group at hand when you write your storyboard.

3) Where should the information be **placed** in your story?

4) What organization or person will you be **interviewing**? What purpose are they serving for your story? What will they provide? Do you imagine that you will weave in scenes of your conversation with them throughout you r story, or place it in one section?

5) Are **you** going to be present in your story (meaning in front of the camera)? Or are you choosing to do a voiceover of you as narrator? Or will you use text and not be part of the story?

6) Will there be a soundtrack or **music** playing? Which songs and where?

7) What do you want the chosen audience to **come away with**? What

feelings and understandings? Do you want them to take action? If so, how best to convey these goals?

This may feel hard to conceive of, because you haven't done your interview yet, but the more you can conceptualize the overall goals of your story, as well as the essential building blocks needed to understand the topi c, the more successful your project will be.

Due at individual conference with Linda in her office, Burton Hall 250D, the week of April 5-10.

Appendix D:
Digital Story Feedback

Feedback on Digital Story *Draft*
Your name: _____
Name of Story producer and Title/topic: _____

Visual Engagement: Quality of photos and video clips and use of graphs and other visual effects. Suggestions and praise.

Audio: How effective is the audio if it were listened to separate from the visual shots and the text? How are the transitions from music to voiceover to interview? What suggestions do you have? What is working well?

Length: How is the overall length of this story? If it felt long in places, point to specific scenes or sections, and give suggestions.

Incorporation of Research:
Was it clear where the quotes and statistics came from? Did you have enough time to absorb the information? Are there any slides where it wasn't clear what was the student's writing a nd what was a paraphrase or a quote from the original source?

Any other comments and/or suggestions?

Appendix E:
Production Experience Inventory
(pre & post)

Instructions:

Please place a check the box that best represents your experience with the task below. If you select yes, please indicate approximately approx. how many times you believe to have performed indicated task(s).

Video Production Experience

1.   I have captured video using a video camcorder (Xacti, MiniDV, Flip)?

yes ☐   no ☐

If Yes, please indicate camcorder type as best as possible: _____

If Yes, approx. how often? 1-5 occasions ___   5-10 occasions ___   10+ occasions ___

2.   I have transferred video from a camcorder to a video editor (Windows Movie Maker, Apple iMovie, Final Cut Express)?

yes ☐   no ☐

If Yes, please indicate video editor type: _____

If Yes, approx. how often? 1-5 occasions ___   5-10 occasions ___   10+ occasions ___

3.   I have made at least one cut (deleted part of a clip, split a clip in half, etc..) to video a clip using a video editor?

yes ☐   no ☐

If Yes, approx. how often? 1-5 occasions ___   5-10 occasions ___   10+ occasions ___

4.   I have added still images to video clips to produce a video using a video editor?

yes ☐   no ☐

If Yes, approx. how often? 1-5 occasions ___   5-10 occasions ___   10+ occasions __

---

5.   I have added additional sound to video clips (music, voice over narration, sound effects) using a video editor?

yes ☐   no ☐

If Yes, please indicate sound type: _____

If Yes, approx. how often? 1-5 occasions ___   5-10 occasions ___   10+ occasions ___

---

6.   I have uploaded video to an online video sharing service(s) (YouTube, MediaMill)

yes ☐   no ☐

If Yes, please indicate video sharing service as best as possible:

_____

If Yes, approx. how often? 1-5 occasions ___   5-10 occasions ___   10+ occasions ___

7. I have used a tripod in producing video?

yes ☐   no ☐

If Yes, approx. how often? 1-5 occasions ___   5-10 occasions ___   10+ occasions ___

Audio/Image Editing Experience

8.   I have edited images using an image editor (Photoshop) to edit images?

yes ☐   no ☐

If Yes, please indicate image editor type as best as possible: _____

If Yes, approx. how often? 1-5 occasions ___   5-10 occasions ___   10+ occasions ___

9.   I have edited sound using an audio editor (Garageband, Audacity) to edit sound?

yes ☐   no ☐

If Yes, please indicate sound editor type: _____

If Yes, approx. how often? 1-5 occasions ___   5-10 occasions ___   10+ occasions ___

Other Types of Media Production Experience

10.   I have used presentation software (i.e., PowerPoint, Keynote) to create a presentation?

yes ☐ no ☐

If Yes, approx. how often? 1-5 occasions ___ 5-10 occasions ___ 10+ occasions ___

11.   I have used website or blog software (Dreamweaver, Blogger) to create a website ?

yes ☐ no ☐

If Yes, please indicate web creation tool: _____

If Yes, approx. how often? 1-5 occasions ___ 5-10 occasions ___ 10+ occasions __

Appendix F:
Media Production Skill Set Self-Efficacy Belief Survey Questionnaire
(pre & post)

Survey-Questionnaire

1	2	3	4	5	6	7	8	9	10

Cannot
certain
do at all
do

Moderately

can do

Highly

can

On a scale of 1-10 (1 being least and 10 being highest), please rate your current confidence in being able to produce a video digital story.

Media Production Survey

1	2	3	4	5	6	7	8	9	10

Cannot
certain   ```````````````````````````````````````can do

Highly

can do

On a scale of 1-10 (1 being least and 10 being highest), please rate your *current* confidence level ability to produce a video digital story.

Video project type	Confidence
1. Create a quality 5-7 minute video digital story?	_____
Learning project type 2. Develop a quality outline or storyboard for my project by the deadline?	_____
3. Prepare for a quality interview, including background research and question writing?	_____
Equipment use 4. Use a tripod to produce video that is more still?	_____
5. Use an external microphone to produce higher quality sound?	_____
Video editing software use 6. Transfer video clips from the camera to video	_____

editing software?	
7. Delete, split, and move video clips to my digital story using video editing software?	_____
8. Add a voice-over narration and sync audio to the video using a video editor?	_____
9. Add a music clip and sync the music to my video using a video editor?	_____
10. Add a title to my video?	_____
11. Add an image to my video?	_____
12. Store and backup my project files (video, images, audio)?	_____
13. Upload a video to a streaming service?	_____

Appendix G:
Student Feedback on Changes in Self-Efficacy Belief Responses
(post only)

If your response changed since the last time you took this survey, please indicate the question number above that changed, and *why* you think your confidence has changed for the better or worse.

Question 1   Why do think your confidence changed for this question?

_____

_____

Question 2   Why do think your confidence changed for this question?

_____

_____

Question 3   Why do think your confidence changed for this question?

_____

_____

Question 4 Why do think your confidence changed for this question?

_____

_____

Question 5 Why do think your confidence changed for this question?

_____

_____

Question 6   Why do think your confidence changed for this question?

_____

_____

Question 7   Why do think your confidence changed for this question?

_____

_____

Question 8   Why do think your confidence changed for this question?

_____

_____
Question 9   Why do think your confidence changed for this question?

_____

_____
Question 10   Why do think your confidence changed for this question?

_____

_____
Question 11   Why do think your confidence changed for this question?

_____

_____
Question 12   Why do think your confidence changed for this question?

_____

_____
Question 13   Why do think your confidence changed for this question?

_____

_____

Appendix H:
Student Production Support Resource Preferences
(post only)

Use of SMART Learning Commons Production Support Resources

Please specify any support you received from the SMART Learning Commons including use of equipment, production computers, or support from SMART student staff or media professionals in providing support for your video project.

Video Camera ☐

Tripod ☐

Audio Recorder ☐

Handheld Microphone ☐

USB Microphone ☐

External Hard drive ☐

Mac Computer ☐

iMovie ☐

Final Cut Express ☐

PC Computer ☐

Adobe Premier Elements ☐

Conversion station ☐

Help from professional staff (scheduled consult) to get help with video editing, changing formats, saving project, or uploading project to MediaMill? ☐
If Yes, please specify type of help received by professional staff.

_____

_____
Help from students at the front desk student staff to get help on my project (i.e., audio/video editing, changing formats, saving project, or uploading project to MediaMill)? ☐
If Yes, please specify type of help received by student staff.

Media Production Resources and Support Received from other Campus units (besides the SMART Learning Commons)

Please specify any production support you received from other campus units on campus *besides* the SMART Learning Commons, including equipment, production computing, and media production support from student or professional media staff.

Video Camera ☐
Tripod ☐
Audio Recorder ☐
Handheld Microphone ☐
USB Microphone ☐
External Hard drive ☐
Mac Computer ☐
iMovie ☐
Final Cut Express ☐
PC Computer ☐
Adobe Premier Elements ☐
Conversion station ☐

Help from professional staff to get help with video editing, changing formats, saving project, or uploading project to MediaMill? ☐

If Yes, please specify type of help received by professional staff.

_____

_____

Help from student staff to get help on my project (i.e., audio/video editing, changing formats, saving project, or uploading project to MediaMill)? ☐

If Yes, please specify type of help received by student staff.

Please list the names of any other campus supports units used to support your media project.

_____

Please feel free to share any other comments related to your experience producing media:

_____

_____

Appendix I:
Demographic Information
(post only)

Demographic Information

Gender

Male ☐ Female ☐

Year in School

First Year ☐ Second Year ☐ Third Year ☐ Fourth Year ☐

Major _____

Minor (if applicable) _____

Appendix J:
Focus Group Interview Questions

Initial perception

Did you know when you signed up for the class that you would be producing a video last semester?

(If not), describe what you thought when you first learned of the project?

Previous Production Experience

Describe your previous experience producing video? Producing media in general?
How much experience did you have using video equipment and video editing software before the project?

Initial Self-Efficacy Beliefs

Before you started working on the video, did the technology part of the media production process concern you? How confident were you in your abilities to learn these technologies?

Describe your thoughts on the video workshop overview we provided. Did the workshop provide you a better understanding? Did the workshop change your comfort with the technologies and/or production process at that point?

Digital Story Production Process

Talk a little bit about getting started on the video production process.
Did you have difficulty getting started with any parts of the video production (e.g., creating an outline, picking a topic, setting up/preparing for the interview)?

What about the production technique, did you think about how to set up your shot? Did you use a tripod? External microphone? Did you think about the sound and lighting for your interview?

Did you have any difficulty obtaining equipment for your project? Where did you get the equipment you used?

Video Editing

Describe any challenges you encountered during the video editing process.
What video editor did you use? Did you have any difficulty using the video editor(s) through out the process? How about adding sound, voice over, or images? Any other parts of the video editing process?

Did you have any problems backing up your files?

Did you have any troubles with using formats? How about issues with sound or video quality after you created your video file?

Did you encounter any issues with uploading your video to Media Mill?
Did you receive assistance on video editing? If so, by whom?

Post Production Self-Efficacy Beliefs
Overall, what aspects, if any, were challenging for you producing these videos?
Describe the different media production skills you learned through this project.   To what extent do you believe you were able to develop your video production skills by going through this project, as opposed to when you started?

Suppose I were to ask you to produce another video today. How confident are you currently in your abilities to produce a quality digital story? Do you think you could build off what you experienced?

Overall Project Perception
Did you enjoy the project overall?

How much time would you say you put into this project?

How would you rate the quality of your project?

What about your experience going through the video production process?

Would you like to see this type of project in other classes?

Do you believe that you learned skills through out this project that you can apply either in other courses, other parts of your life, or perhaps after you graduate?