Multimodal Composition and Digital Technology: Investigating the Out-of-Class Experiences of Students in a First-Year Composition Class

Jennifer Morgan Sims

University of New Mexico, Albuquerque
Jennifer Morgan Sims
Candidate

Department of English Language and Literatures

This dissertation is approved, and it is acceptable in quality and form for publication:

Approved by the Dissertation Committee:

Tiffany Bourelle, Chair of the Committee

Beth Davila

Andrew Bourelle

Teresa Y. Neely
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by

JENNIFER MORGAN SIMS

B.A., English, California State Polytechnic University, Pomona, 2004
M.A., English, California State University, Long Beach, 2007

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for Jeremy...for everything

“...this time with style.” — Thom Yorke, “Dawn Chorus” 2019
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MULTIMODAL COMPOSITION AND DIGITAL TECHNOLOGY:
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EXPERIENCES OF STUDENTS IN A FIRST-YEAR COMPOSITION CLASS

By

Jennifer Morgan Sims

B.A., ENGLISH, CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA, 2004
M.A., ENGLISH, CALIFORNIA STATE UNIVERSITY, LONG BEACH, 2007
Ph.D., ENGLISH, UNIVERSITY OF NEW MEXICO, ALBUQUERQUE, 2019

ABSTRACT

This study explores how first-year students in a multimodal composition class use digital
technology outside of class to complete their projects. The tendency in Composition
studies to characterize students as “self-teaching” users of technology may obscure
complex out-of-class experiences, so this study analyzes data from project reflections of
19 first-year students completing digital multimodal compositions to gain insight into
their practices. Qualitative analysis reveals that the technical problems students
encountered tended to be frequent and repetitive, and some problems were exacerbated
by conflicts between the assignment requirements and the capacity of the technology
required. Students tended to use trial-and-error methods in response to problems, and
they frequently switched to another program rather than solve the problem at hand. Going
forward, instructors should dialogue with students about the advantages and drawbacks of
technology, encourage a variety of technology and composition types, and assess projects
using technology criteria and with the help of technology-focused student reflections.

Key words: multimodal composition, digital technology, self-teaching, first-year
composition
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Chapter 1: Introduction

This dissertation explores the out-of-class practices of university students using digital technology to complete multimodal compositions in a first-year composition (FYC) course. A review of the literature has established that students are generally considered “self-teaching” users of technology who do not require specific instruction and who are motivated to overcome technical problems if they are working on personally relevant topics. The overarching aim is to explore what students do when they use the required technology outside of class, with a focus on the technical problems they encounter, how they respond to those problems, and how they describe using the technology to complete multimodal projects and pursue rhetorical goals. Collecting and analyzing this data may yield information on how to improve the implementation of digital multimodal composition practices in first-year composition classes. Qualitative analysis of data collected from student project reflections may help inform the teaching of digital multimodal composition in FYC classes. This chapter presents the background and motivation for the study along with an overview of the project and an outline of the chapters in this dissertation.

Background: Computers and Education

The spread of digital media has resulted in new communication practices and learning opportunities that require new educational strategies from educators in order to prepare students to succeed in higher education and their careers, contexts increasingly dependent upon digital technology. At the university level, changes in curricular expectations for preparing students to use digital technology in school and at work have prompted an increasing number of English composition programs to examine how they
educate first-year students in written communication and work to adapt to the digital age by expanding the use of digital technology in their curricula.

Beyond the use of computers for basic word processing and assignment submission, scholars in the field of rhetoric and composition have called for developing and applying a rhetorical approach to teaching writing with technology, in part to counter technological determinism and push back against the influence exerted by government and industry on the public perception of these tools (Selfe, 1999), and as part of a broader movement to define composition instruction as inclusive of a rhetorical approach (Hesse, 2010). One way FYC instruction has responded is to teach written communication in the form of “digital multimodal compositions,” or compositions featuring multiple semiotic modes (Kress, 1998) that allow for the creation of complex forms of expression/communication/persuasion that are distributed using digital technology (Anderson, 2008; Arola, 2010; Bickmore & Christiansen, 2010; Bump, 2013; DePalma & Alexander, 2015; Luke, 2000; Takayoshi & Selfe, 2007; among others). This approach positions text as just one of the modes available for composing and contributes to students’ acquisition of the literacy practices needed in the digital age by promoting rhetorical awareness in the use of technology. These approaches can also be based on students’ “multiliteracies,” a term coined by the New London Group which “…engages with the multiplicity of communications channels and media [and] with the increasing salience of cultural and linguistic diversity” (Cope & Kalantzis, 2000, p. 5).

Although these changes are becoming increasingly widespread in FYC classes, there is no formal expectation that instructors are responsible for teaching students how to use the technology required for creating digital multimodal compositions, that they be
aware of students’ existing computer use, or that they consider the ways in which students use computers outside of class to complete these projects. The use of technology may be deemphasized as a set of skills students already possess or that they can teach themselves on their own (Bump, 2013). The focus has been on what writing instruction and the rhetorical tradition can add to the digital skills generally considered established in, or attainable by, college students. In their Position Statement on Multimodal Literacies, the National Council of Teachers of English (NCTE) Executive Committee states that “[i]n digital forms, students, even very young students, are often more literate in the technical aspects of digital production than many of their teachers” (2005). This statement reflects an assumption that has helped define the practices of composition programs and educators as reacting to changes in students.

In their Outcomes Statement for First-Year Composition (adopted in 2014), the Council of Writing Program Administrators (CWPA) links contemporary composing practices to the growth of digital technology and lists the understanding and use of “a variety of technologies to address a range of audiences” as an outcome for students in all levels of writing classes. There is, however, no mention of taking a student’s existing computer skills into consideration when designing assignments. This leaves out consideration of how students actually work to complete digital assignments for their FYC classes. With these expectations guiding instructional practice, instructors may be primed to downplay or ignore the ways in which students are using technology to complete multimodal assignments, particularly what students do when they encounter technical problems that have to be addressed before the student can proceed with the content of their project.
Study Motivation

This study arose primarily out of experiences I had attending a teaching practicum in the fall of 2016. Intended for the incoming TA cohort, the class was an orientation to our first-year writing program, which had been updated since my arrival as a graduate student to include instruction in multimodal compositions based on students’ multiliteracies, or their “cultural and linguistic diversity” (Cope & Kalantzis, 2000). This new approach was presented mainly in the form of the first assignment taught in English 110: a profile of a discourse community presented on a website. To gain an understanding of student experiences, we had to complete the project ourselves.

I was intrigued by the idea of identifying and profiling a discourse community to which I belonged, particularly the opportunity to include images and videos. I perceived the richness of augmenting writing with other modes, particularly since there was no question that I would be profiling the music fandom I’ve been a part of for many years. My passion for the band Radiohead and the fact that my discourse community is connected digitally through image and sound made this seem like a perfect choice, and although the prospect of using a website builder for the first time was intimidating, using digital media to create this type of project seemed natural. What I didn’t realize at the time was just how difficult it would be to make a website or how this difficulty would require the bulk of my time and attention, diverting significant energy away from the stated purposes of the assignment.

The assignment prompt was focused mainly on elements of traditional essay writing. We were given instruction on how to pick a discourse community to profile and guidelines for generating content and drafting. The project required the use of Google
Sites, and the class was held in a computer lab with class time devoted to hands-on project work, but there was little in the way of technical instruction for Google Sites beyond telling us to think about what makes for good website design (mainly don’t use too much text and be sure to include multiple pages) and directing us to tutorials. I forged ahead with generating and organizing my content while watching tutorials on how to use Google Sites.

Working with the content was a joyful experience. It was easy to get lost in trying to represent something so important to me using multiple modes, but using Google Sites was a nightmare from the start. Try as I might I just couldn’t get the program to work the way I wanted to realize the vision I had for my project, resulting in frustration and anger. The final project was a non-functional disaster reflective of my inability to work the program coupled with the fact that I gave up when I couldn’t solve my problems. It was promptly buried, but it took a while for the sting of the 72% I received to wear off. This became the lens through which I began to view multimodal composition.

In the semester that followed I enrolled in a class on teaching multimodal composition, and I carried my experiences with me in the form of guarded suspicion. Fortunately, the class emphasized the many positive aspects of multimodal composition, including the importance of bringing diverse viewpoints and students’ multiliteracies into the composition classroom first proposed by the New London Group in 1994. Remembering the joy and motivation I initially felt when creating my discourse community profile, I became increasingly convinced that a digital multimodal approach to composition instruction is the way to move forward as a discipline, but I also noticed a lack of emphasis on the more operational uses of digital technology similar to what I had
encountered in the practicum. I began to realize that the teaching of multimodal composition in college classrooms is based (at least in part) on two assumptions: that a composition class should be focused on the rhetorical considerations of technology and multimodal composition and that it isn’t necessary to consider technology because students are “self-teaching.” The result is assignments based on those assumptions that may obscure students’ actual experience with using digital technology. Given that as a teaching assistant I was required to implement the new curriculum, I wanted to find out why writing programs and classes were leaving out consideration of student use of technology outside of class and what students are doing when they work to complete these types of assignments. This project is my attempt to explore these issues.

**Problem Statement**

There is a gap between the understanding of students’ computer use that informs our practice when designing projects requiring digital technology and how students actually use digital technology to complete their projects. FYC instructors may be primed to ignore the specifics involved in requiring various digital tools when they assign multimodal composition projects, even to the point of assuming all students are more or less equally technologically proficient to a relatively high degree, obscuring what may be a complex reality encompassing a wide range of practices and abilities. Without information about how students respond to assignments requiring the use of digital technology, we are unable to ensure that the assignments are equitable, requiring a similar investment of time and effort from a majority of students in the class and resulting in projects that can be assessed fairly. Research into student practices is needed to inform our approach to teaching digital multimodal composition.
**Project Overview**

**Study aims.** This study seeks to provide information about the investments (e.g. time, energy, and attention) students have to make to complete digital multimodal composition projects that may feature hidden difficulties involving technology. In their Position Statement on Teaching, Learning, and Assessing Writing in Digital Environments, the Conference on College Composition and Communication (CCCC) notes that “[t]he focus of writing instruction is expanding: the curriculum of composition is widening to include not one but two literacies: a literacy of print and a literacy of the screen” (2004). The ongoing incorporation of screen literacy into composition curricula is an invitation for research into best practices; therefore, the purpose of this study is to investigate how students are engaging with one form of screen literacy instruction, namely digital multimodal composition.

The CCCC statement makes recommendations concerning students and computer use for programs and administrators, including that writing programs, …in concert with their institutions, will assess students’ readiness to succeed in learning to write in digital environments. Programs should assess students’ access to hardware, software and access tools used in the course, as well as students’ previous experience with those tools. In order to enhance learning, programs may also assess students’ attitudes about learning in online environments. (2004)

The statement also includes recommendations that courses featuring digital writing will “provide students with opportunities to apply digital technologies to solve substantial problems common to the academic, professional, civic, and/or personal realm of their lives,” and that these opportunities will “include much hands-on use of technologies.” Although it is considered important for programs to assess digital readiness while providing opportunities for using digital technology, the statement does
not address what instructors should do when confronted with a range of students, some of whom may struggle when applying these technologies “hands-on.”

One approach to developing our efforts to address these recommendations is to explore how students are responding after they are given assignments requiring the use of digital technology in FYC classes. This approach requires investigating how students cope with the technology needed to complete these assignments, bringing together expectations underlying digital multimodal composition assignments with students’ actual practices to investigate how students respond to this type of instruction. The goal is to gain a deeper understanding of how the expectations underpinning these approaches relate to students’ actual practices. The ultimate aim is to help inform increasingly nuanced and effective assignment design, pedagogical approaches, and assessment strategies to promote equitable instruction for students.

Study Summary

This study explores students’ use of digital tools through a qualitative analysis of students reflecting and self-reporting on their out-of-class use of digital technology to create multimodal compositions for a first-year, second-semester composition class held in the spring of 2017. Data were collected in the form of narrative reflections from class projects that specifically prompted students to reflect on how they used digital technology outside of class to complete multimodal projects. The project reflection prompts asked students to consider the technology they used for their projects, including how they responded to problems. Qualitative analysis of the data is based on coding schemes designed to examine the range of students’ use of digital technology and to explore how they used multiple modes and media to create their projects.
As we move further into the 21st century, digital technology will continue to grow and influence educational practices. Exploring how these changes are affecting students by querying students in a FYC class working to complete digital multimodal compositions allows for insight into how students are responding to one area of change, connecting the expectations of composition programs with student experiences. Students are using the various forms of technology required by these assignments that they may or may not be familiar with or confident learning to use in the ways required by the assignments; therefore, exploring how they respond to these expectations allows us to learn from the students themselves what demands these types of assignments make on them and how they respond. Analyzing students’ subjective reports of their perceptions and practices also allows for in-depth and finely textured exploration of student differences, the types of problems they confront, and how they respond to those problems, which in turn informs our ability to teach digital multimodal composition effectively.

Chapter Outline

The remainder of this dissertation is organized into the following chapters:

Chapter 2 presents my exploration of the emergence of digital multimodal composition as a broad concept informing course design along with some of the ways scholars have responded to the rise of digital technology. This is followed by an overview of research into students’ existing use of digital technology. I then define the concepts used to frame the study, including how scholars describe problem solving with technology. Finally, I present the research questions that guide this study. Chapter 3 is a discussion of the qualitative research methods used, including descriptions of the participants and the data
collection instruments and coding structures linking the research questions to the data. Chapter 4 presents the results of my analysis and a discussion of these findings. Finally, Chapter 5 concludes with my discussion of the implications of the results, including how these results might inform pedagogical approaches to digital multimodal composition. I end by presenting some of the limitations of this study along with future research possibilities indicated by the outcomes presented here.
Chapter 2: Literature Review

This study takes as its starting point literature on the integration of digital technology into first year university writing classes through instruction in digital multimodal composition.¹ Scholars have advocated for these approaches as a way to update the field and provide appropriate writing instruction for digital-age students (Bourelle & Bourelle, 2015). Working on digital multimodal compositions allows students to learn about and practice rhetorical approaches to communicating in digital environments and provides them with opportunities to develop critical thinking. The growth of digital technology has also resulted in the development and recognition of a variety of new literacy practices that can be explored and expressed through digital multimodal compositions, and assignments with personally relevant topics may motivate students to overcome technical difficulties (ALA, 2013; Becker, 2018). But while these positive aspects of using technology as a part of writing instruction are promising, these rationales may be masking complications with student efforts to use computers when creating these types of projects. In particular, how approaches to teaching digital multimodal composition have relied on assumptions about students as self-teaching users of digital technology (Brandt, 2001; Bump, 2012; Yancey, 2009), leaving out consideration of what demands these types of assignments might be making on students.

When assumptions about students as self-teaching technology users are juxtaposed with research on the digital technology practices of the student-age population, what emerges is a gap between expectations for student preparedness for

¹ Use of the term Digital Multimodal Composition is based on Lauer’s (2009) synthesis of the work done by the New London Group to define the term multimodal: “…as a result of digitization, all modes can now be realized through a single binary code, and the medium of the screen is becoming the primary site where multiple modes can be composed to make meaning in dynamic ways” (p. 227).
digital multimodal composition and a complex range of individual experience and practices. Examination of the literature reveals two of the primary ways this gap has been shaped: by establishing the need to counter broader social promotion of “functional” digital literacy and by asserting that the discipline can rely on non-digital pedagogical approaches to teach digital multimodal composition. Both of these rationales deemphasize the role computer tools play in the process and direct researchers and instructors away from considering the technical demands made on students working to complete these projects, first by defining terms related to the use of technology that prioritize rhetoric and subsume considerations of practical computer use and second by presenting evidence that writing instruction has long concerned itself with multimodal composition in material forms, thereby reducing the importance of the presentation medium.

To explore the gap between the expectations about students undergirding assignment requirements and the reality of student practices, I designed a descriptive case study examining data gathered from student participants who used computers to complete digital multimodal compositions in a first-year composition class I taught in the Spring of 2017. The study is exploratory, and my goal was to query students directly on the challenges posed by the need to use digital technology to create multimodal compositions, in particular how they describe working with technology and how they respond when encountering technical problems, or the breakdowns that occur when an individual lacks the knowledge required to accomplish the goals they are pursuing with the technology (Duffy et al., 1992). Technical problems stall progress, requiring students to solve issues with the technology before they can continue to work on the content of the
assignment, so looking at this aspect of using digital technology is an important consideration if we are to realize the potential of this type of instruction. Data were collected in the form of project reflections completed by participants as part of their assignments. The data were then analyzed to explore how students characterize technical problems and respond to them and how they use digital technology to create their multimodal projects.

This chapter presents the literature framing this study, including rationales for digital-age writing instruction and the responsibilities of the discipline, portrayals of students as self-teaching computer users, arguments for the role of writing programs to promote critical rather than functional technological literacy, rationales for teaching digital multimodal composition using traditional, non-digital approaches, and multidisciplinary research exploring the complex nature of students’ relationship to digital technology. Next, I discuss the foundational research of my analytical framework, including the task model of technical impasses described by Duffy et al. (1992). Lastly are the research questions I address with this study and a chapter outline.

**Updating Writing Instruction for Students in the Digital Age**

As a result of the growth of digital modes of communication and the subsequent impact on societies, communities, and the lives of individuals, “many practices of reading and writing are being transformed by people’s participation in online activities and, as a result, the dynamics of everyday life are changing in profound ways” (Barton & Lee, 2012, p. 282). In turn, these advancements and observations have promoted changes in composition instruction along with a developing research agenda into how digital technology is interacting with composition and literacy practices, with scholars exploring
the ways in which teaching the analysis and production of digital texts can meet the needs of students in the 21st century.

Underpinning these new ideas in the field of rhetoric and composition has been the assumption that we are responding to broad social changes that have already had a profound impact on the lives of individuals. In 2000, Luke noted how, as a result of new technologies, “[i]t seems that questions about the significant and permanent social changes seeping into every crevice of our everyday work and private lives are on everyone’s mind” (p. 69), and Barton and Lee went on to recommend that “[a]ll aspects of the processes and practices of reading and writing need to be re-examined now that so much reading and writing takes place in new spaces with new affordances” (2012, p. 294). The belief has been that since these changes have already influenced the lived reality of individuals, a new type of student needing new instructional strategies has emerged.

The evolution of beliefs driven by these changes has invited a profound examination of our existing assumptions about writing. As Kathleen Yancey points out:

[h]istorically, like today, we compose on all the available materials. Whether those materials are rocks or computer screens, composing is a material as well as social practice; composing is situated within and informed by specific kinds of materials as well as by its location in community. We have simply never seen it quite so clearly as we do now. (2009, p. 7)

This new perspective on the ubiquitous nature of composing in people’s lives has led to increased awareness of how our educational practices function as structuring elements in society, how “[l]iteracy pedagogy, in other words, has been a carefully restricted project – restricted to formalised, mono-lingual, monocultural, and rule-governed forms of
language” (DePalma & Alexander, 2015, p. 9). The proliferation of new types of communication used by the communities Yancey mentions has cast writing instruction in a new light. What it means to “write” is changing now that digital technology has transformed communication and challenged the emphasis on print, and the effects have been felt by those tasked with writing instruction, both because we are in the business of teaching students how to communicate effectively and because “[n]ot allowing students to experiment with these new forms of writing hampers their ability to learn effective communication skills” (Rea & White, 1999, p. 422).

For Fulwiler and Middleton these challenges require new instructional approaches:

> [t]his fundamental media transformation means that in order to be responsive to the emerging literacies and expectations of our students, teachers need to reconsider not only the kinds of texts we teach, but also how we teach the new processes associated with new media texts. (2012, p. 42)

Kathleen Yancey takes it even further, arguing that “[t]oday, in the 21st century, people write as never before—in print and online. We thus face three challenges that are also opportunities: developing new models of writing; designing a new curriculum supporting those models; and creating models for teaching that curriculum” (2009, p. 1). These statements reveal the belief that students engaging in digital forms of communication have evolved beyond traditional writing practices, placing pressure on writing instruction because “[t]oday, if U.S. students cannot write to the screen—if they cannot design, author, analyze, and interpret material on the Web and in other digital environments—they will have difficulty functioning effectively as literate human beings in a growing
number of social spheres” (Hawisher et al., 2004, p. 2). These concerns on the part of scholars served both as an analysis of the contemporary communication landscape and a road map to creating a response from the field of rhetoric and composition.

According to Yancey “[w]e can and should respond to these new composings and new sites of composings with new energy and a new composing agenda” (2009, p. 7). There has been considerable work answering these challenges by seeking out the best ways to educate a new digital communicator capable of critical thinking in the contemporary age with a diverse array of literacy practices and an understanding of the rhetorical strategies vital to communication. Digital multimodal composition as an assignment structure meets the brief because it can be described by Lauer’s (2009) synthesis of the concepts behind the New London Group’s term multimodal: “…as a result of digitization, all modes can now be realized through a single binary code, and the medium of the screen is becoming the primary site where multiple modes can be composed to make meaning in dynamic ways” (p. 227). In other words, these projects go beyond both monomodal and print communication practices to take advantage of the creative and communicative capacities of digital tools and environments, but these possibilities are only realizable through the successful use of digital technology.

**Digital multimodal composition and basic writing.** The expanding field of composing emerging as part of the digital age also relates to basic writing. As an approach to mitigating the inequality brought about by “racist and classist structures in education” (Council of Basic Writing, 2019), incorporating digital multimodal composition into writing classrooms also provides opportunities to level the playing field for students whose print composing skills may not match their intellectual ability.
Creating multimodal classrooms inclusive of basic writers increases the tools available for students to compose with, but it is also important that these writers have the same opportunities to work with digital technology as their peers, or we risk widening the gap instead of narrowing it. Henry, Hilst, and Fox (2011) argue that today’s basic writing should be basic composition, since ignoring digital technology in basic writing classes risks “neglect[ing] our students’ digital communication needs” (p. 2).

Henry et al. (2011) also follow the argument on updating writing instruction by modeling our approaches on “…the likeness of the contemporary student” (p. 4), and argue that doing so for basic writers is even more imperative if we are to prepare them to be successful in classes that require the use of digital technology, especially the presentation aspects of composing. Digital multimodal composing approaches are also aligned with the Council of Basic Writing’s developing position statement, Principle 2, which states that basic writers are not working on the precursor to academic work, they are doing academic work. Digital multimodal composing practices help basic writing instructors go beyond sentence structure and grammar drills to guiding their students through creating compositions in which writing is only one mode among (potentially) many, helping students to move past the basic writer label and realize their potential as composers. However, if all of our students are to achieve success as digital multimodal composers, we cannot take their prior use of computers as an absolute (if vague) given we need to adapt to in order to update the field. We need to develop a greater understanding of their technology use. This project explores how students use digital technology outside of the classroom while arguing that presuming students to be self-
teaching computer users has resulted in too little attention being paid to the practical considerations of computer use.

**The digital student as self-teaching computer user.** Alongside the recognition that new times call for new practices is the widespread assumption that people born in the digital age are automatically proficient computer users. The trend of the conceiving of students as having already developed complex forms of digital technology use is at least partially attributable to Marc Prensky, who coined the term ‘Digital Natives’ to describe people who have grown up as ‘natives’ in digital environments (Prensky, 2001). Prensky completed his metaphor by terming those born before the digital age ‘Digital Immigrants’ or non-native users of technology, which captures some of the unease felt by an adult population confronted with computer technology, but it also captures the tendency to assign digital expertise to traditionally aged students as an organic development in the digital age, indicating a belief that students are natural users of digital technology, beyond the aegis of formal instruction. Although researchers (including Prensky himself) have countered Prensky’s early work (Bennett & Maton, 2010; Kirschner & De Bruyckere, 2017; Kolowich, 2011; Prensky, 2008), it is still representative of persuasive concepts, as seen in NCTE and CWPA statements concerning students and digital technology discussed in Chapter 1. Attributing a monolithic and amorphous digital capability to students of the digital age could contribute to instructors underestimating what they are requiring of students when assigning multimodal compositions in FYC classes.

These assumptions about student self-teaching practices can be seen throughout the literature posed as observational rather than attributional. For example, Bump
observes that “the basic method of learning in the computer world seems to be trial and error, on your own” (2013, p. 114-115). Yancey argues that students gain literacy practices outside of formal instruction because we are in “…a period where composers become composers not through direct and formal instruction alone (if at all), but rather through what we might call an extracurricular social co-apprenticeship” (2009, p. 5), while Brandt describes this as “learning propelled mostly by their own motivations and occurring largely outside of school” (2001, p. 172). When we assume this learning has already occurred and that we are working to catch up to our students’ lived realities, we create the conditions for assuming what students can and are able to do outside of class.

Taken together, these generalizations have formed a powerful argument for new composing practices that meet the demands of the age and the lives and interests of students: digital age students learn how to use computers on their own, so what remains is to shape that use into rhetorical practices. The tacit understanding of the “digital age” student as a self-taught and self-teaching technology user has gone largely unchallenged. Although educators may focus on the need to teach and evaluate multimodal designs, (Bezemer & Kress, 2008; Murray, Sheets, & Williams, 2009; Shipka, 2009; Sorapure, 2006), the concept of a digital-age communicator presupposes practical forms of computer use that are crucial for students, particularly when they are asked to use technology to create multimodal projects.

Composition research informs classroom practices, and in the case of multimodal composition, the research tends to position students as self-teaching users of technology and instructional strategies as responding to that capability. Because these approaches condition expectations, composition instructors may be expecting their students to
possess a shadow skillset when designing digital multimodal assignments. This aligns with Selwyn’s (2016) observations of how students’ relationship with digital technology is likely to be recognized in university programs as a merely attendant aspect of their lives: “On the whole, digital technologies tend to be framed within the academic literature as a neutral, or even benign, presence in higher education” (p. 1007). These expectations may influence instructors, setting them up to overgeneralize in a similar way and fail to take into account what their assignments require of students in FYC classes. Instructors may hold these expectations because they also perceive that the ubiquity of digital technology in the lives of their students “…as an unremarkable feature of the contemporary university; an expected part of the routine of academic study and campus life” (Selwyn, 2016, p. 1006).

Relying on students possessing these assumed skillsets when we design assignments requiring digital technology could be subjecting some students to additional learning challenges that affect their ability to complete the assignments. This matters because in order for digital multimodal composition practices to be successful from the standpoint of rhetoric and composition, students need to be able focus on developing their rhetorical skills and critical thinking while addressing an audience in a multimodal text (Powell et al., 2011, p. 665).

**Rhetoric and digital multimodal composition.** Digital multimodal composition is a powerful tool for teaching a rhetorical approach to communication because the variety of modes available for persuasion increases the possibilities for students to practice the rhetorical concepts of purpose, audience, genre, stance, and design (Bullock, 2016). Efforts to promote these new forms of composition rely on perceived changes in
students’ communication practices in the digital age, mainly that they are immersed in multimodal forms of communication that render monomodal writing comparatively flat. Kress’s (2005) proposal of a new “screen literacy” attained through the understanding and practice of multimodal design can be used to describe familiarity with these new forms of communication, with emphasis on the power of the visual in digital communication. Digital multimodal assignments provide opportunities for students to learn about and practice rhetorical approaches to online communication, and central to these approaches is the increased capacity for digital multimodal projects to convey meaning using a broad spectrum of media that encompass multiple modes.

The digital age has seen the rise of a “…complex relation of modal affordance, rhetor’s interest, and the variability and complexity of social environments” (Bezemer & Kress 2008, p. 174), which for Bezemer and Kress has resulted in a shift from composition to design. Communicating today means taking advantage of a variety of tools, which allows for greater latitude to express a wide range of ideas, shifting from an “…adherence to convention governing the use of a mode—writing, say—to a focus on the interest and agency of the designer in the making of signs-as-texts” (p. 174). Kress sees a fundamental shift in “writing” practices from “telling the world to showing the world,” moving the emphasis from the word to the image, from “getting meaning from a written text” to “making sense of the world around me” (p. 140). This perspective challenges first-year writing programs to respond with instruction that empowers these new designers with rhetorical knowledge to maximize their efforts at communicating and understanding the communications of others in a highly interconnected world.
In addition to increasing connectedness, digital technology promotes communication through its capacity for easy modal production, alteration, and distribution (Hull & Nelson, 2005; Kress, 2000), reducing a variety of communication barriers. The increased ability to augment a written message with images has consequences for the primacy of the written word (Kress & van Leeuwen, 2001). New forms of communication have placed considerable pressure on traditional writing practices, and shifting to multimodal composition not only takes advantage of digital technology, it provides students with an array of modes to communicate meaning that emerges through manipulation of multiple modes.

Bezemer and Kress (2008) conceptualize today’s writers as sign makers concerned with representation using a variety of modes which each have specific affordances. “This enables sign makers to do different work in relation to their interests and their rhetorical intentions for designs of meaning, which, in modal ensembles, best meet the rhetor’s interest and sense of the needs of the audience” (p. 171). Working with a variety of modes opens the door for students to represent themselves and their ideas more personally and broadly, taking them from funneled their ideas into words alone for a limited audience and into an open field of representative meaning and modal combining that can better express their purpose to a far-flung and diverse audience. In other words, multimodal composition allows students to practice a more authentic self as a designer rather than as an adherent to established monomodal practices.

Although the goal of multimodal composition is realizing the power of new forms of communication, variations in computer proficiency among individuals mean that all students will not have the same chance to practice rhetorical design. Work still remains to
clarify how students’ use of digital technology may facilitate or impede their efforts to complete these types of projects. These differences in the use of technology are especially important if we are to promote critical thinking in students.

**Critical thinking and digital multimodal composition.** As students learn about and practice rhetoric in digital multimodal compositions, they can also develop critical thinking skills, particularly toward the use of digital technology for communication in their lives and assumptions about the naturalness these tools take on as “invisible” channels of communication. It’s important for students to be aware of how to use technology to be rhetorically effective communicators while also learning to take a critical stance toward the technology itself. In 1999 Cynthia Selfe urged us to combat the creep of “official” literacy reasserting itself through technology by paying attention to the use of new technology and developing definitions of technological literacy from a critical standpoint. She saw the danger of ubiquitous, uncritical use of these tools as risking re-inscribing literacy/illiteracy paradigms, and she promoted the use of technology in writing classrooms with an awareness of the potential for unequitable literacy chances. In this context, critical literacy is a source of power within traditional arenas of school and work, but a critical stance toward the use of digital technology has grown to include multiple forms.

Pangrazio discusses various aspects of critical digital literacy that have emerged in recent decades, including how student engagement in digital media environments can be described as “a type of ‘resource’ from which to explore the formation of their beliefs, values and responses” (2016, p. 166). When students participate in digital environments, they have a chance to explore how their identity is shaped through a communicative
process, particularly on social media platforms; therefore, instructing students to create social media accounts as multimodal compositions can be an effective way to promote their ability to think critically about identity formation.

A critical approach to technology is tied to casting students as designers as discussed by Bezemer and Kress (2008). Since a design approach requires students to take a variety of modal resources into account when creating acts of communication, multimodal compositions provide students with the opportunity to reflect on the ways in which resources both convey meaning and allow the designer to make new meaning. When students create their own meaning using multiple modes, they are encouraged to take ownership of the resulting representation. For Pangrazio “…what design emphasizes is the desire or interest of the text-maker, essentially providing a relative point of reference in a seemingly unstable and ‘chaotic’ social environment” (2017, p. 166). Designing “writes” the designer into digital representations, which promotes a sense of identification that allows them to gain perspective on their own goals and the goals and representations of others.

By focusing on digital multimodal composition, we can help students develop rhetorical and critical thinking skills in the digital realm, rhetorical skills in regard to using the technology for communication, and critical thinking as a way of viewing technology from a critical stance. These communication practices are central to the longstanding goal of the composition classroom to help produce literate citizens (Hawisher et al., 2004; Knievel, 2009; Yancey, 2009) because they help create “intelligent citizens who can both create meaning in texts and interpret meaning from texts within an increasingly technological world” (Takayoshi & Selfe, 2007, p. 8).
Although approaches to teaching rhetoric and critical thinking in digital environments takes many forms, I argue that Selfe’s early stance of resistance to the ubiquitous and invisible nature of computer tools remains of paramount importance, not just because a non-critical stance toward technology prevents us from resisting technological determinism. Without insisting that digital tools remain visible and subject to examination, we cannot be sure that students are functioning in an equitable learning environment. Expecting students to solve technical problems as an unremarkable and self-guided feature of completing multimodal compositions means some students will struggle in first-year writing classes, even when these students are highly motivated to explore and express one of the hallmarks of digital multimodal composition: their multiliteracies. The next section explores some of the ways multimodal composition practices facilitate the variety of new literacy practices emerging in the digital age.

**Multiliteracies and digital multimodal composition.** When the literacy educators who came to be known as the New London Group convened in New Hampshire in 1994 to assess literacy education in the late 20th century, they brought together their observations about profound changes in the ‘lifeworlds’ of their students (Cope & Kalantzis, 2000). These changes, described as “increasing local diversity and global connectedness,” were the result of new connections made possible by digital technology and the Internet and the social, political, and economic developments driven by these new technologies. Recognition of the value of these new communication tools and the diversity they promote was captured by the term “multiliteracies,” which reflected the belief that focusing on individual literacy practices revealed opportunities for a pedagogy “… centered on learners as agents in their own knowledge processes,
capable of contributing their own as well as negotiating the differences between one community and the next” (Cope & Kalantzis, 2009, p. 172).

Beyond communication, multiliteracies as individual practices emphasizes the variety of perspectives that are facilitated by digital technology. For Duncum “…any cultural site, of any kind, can be understood according to multiple readings generated from the multiple positions from which one views, reads, or hears” (2004, p. 152). The ways in which information is communicated feed multiple readings, both for the individual receiving input through a variety of media and as culturally relevant viewpoints that are defined through the plural. This is has accelerated recently because “…all cultural sites, but especially ones like television and the Internet, include a range of modalities, especially language, images and sound” (p. 253).

From this perspective, teaching multimodal composition practices in first-year writing classes mirror how students are communicating and making their own personally relevant meaning, but these practices also respond to a shift in authority away from institutions and toward individuals. This means that writing instruction today may be less about correct form and more about rhetorical intent. By featuring composition in multiple modes, writing classes can provide students with opportunities to express personally relevant meaning rather than reciting form. Since students are able to exercise greater latitude in modal representation, these new forms of meaning-making are what Cope and Kalantzis (2009) describe as “remaking,” and to teach in this context requires not just multimodal projects, it requires the recognition that

…all forms of representation, including language, should be regarded as dynamic processes of transformation rather than processes of reproduction…meaning makers are not simply replicators or
Digital multimodal compositions can act as access points for individuals who hold a wide range of diverse experiences to find and make space for themselves in the classroom. This approach also creates the possibility for instructors to avoid top-down instruction in correctness, promoting not just inclusion, but empowerment. In their 2009 revisiting of the initial concepts of multiliteracy and multimodality, Cope and Kalantzis frame the teaching of literacy as “not about skills and competence; it is aimed at creating a kind of person, an active designer of meaning, with a sensibility open to differences, change and innovation” (p. 175). In addition to active meaning making, these practices are part of a “transformative process, and a pedagogy based on that recognition is more likely to open up viable life courses for a world of change and diversity” (p. 175).

In the spirit of the New London Group, multimodal compositions should feature non-homogenous and individual practices that, if they did not originate in digital spaces, are often developed and shared in those spaces. These types of projects are motivating to students because they are personally invested in the topics, but even these claims rely on a portrait of students as capable users of technology, and more information on how students perceive what it’s like to use digital technology for personal projects is key to implementing these types of assignments in FYC classes. The current study explores some of the ways students use technology to represent aspects of their identity, with the aim of gaining student perspectives on the usefulness of digital tools for personally relevant projects.

A pedagogy of multiliteracies is a valuable bridge between new generations of designers and the changing world they will confront, but that very changeability poses...
challenges for establishing a starting point for that bridge, namely defining what it means to be literate in the digital age. The next section explores ongoing efforts to create and refine definitions related to the use of digital technology. My primary focus is to explore how the concept of practical computer literacy is generalized and subsumed into larger definitions in ways that I argue deemphasize the importance of these fundamental abilities.

**Definitions of Computer Literacy Subsume Basic Computer Use**

One of the challenges with understanding what producing digital multimodal compositions requires of students is that the broad project of defining “digital literacy” (and associated terms) within the field of composition studies has generally diminished the importance of student’s existing computer skills. This has taken the form of focusing on the inherently rhetorical nature of digital environments and reasserting the role of literacy educators to help students become aware of and resist the ideological forces that flow through and around all forms of technology.

Discussions of digital technology in the field of rhetoric and composition have certain characteristics, including situating computer use within general literacy practices and defining that use as cultural, social, interconnected, and complex (Selfe, 1999). But prioritizing these aspects of computer use as essential to literacy education means that practical forms of computer literacy, when they are included, are deemphasized, viewed as an attendant skill or as a counterpoint to emphasize the importance of what scholars want to focus on, primarily developing rhetorical literacy and critical thinking within digital environments. Moreover, the promotion of basic computer use from other sectors of society can be seen as part of an attack on literacy education generally, and calls to
develop critical and rhetorical digital literacy are sometimes framed as correctives to other socially promoted uses of computers (Selber, 2004; Selfe, 1999). In the following sections I examine this discussion through definitions related to digital literacy and digital composition practices.

**Combating technological determinism.** As computer use expanded in the late 20th century, some literacy educators became concerned that these new forms of technology were being co-opted by government and industry in service of goals that were not necessarily supportive of the best interests of individuals or an educated body politic. In her book *Technology and Literacy in the Twenty-First Century*, published in 1999, Cynthia Selfe explores the role English studies and composition and language arts teachers can and should be taking in the digital age. She introduces the work as an effort to explore how government’s advancing of ‘technological literacy’ needed a response from educators, pointing out that government and industry were pursuing this form of literacy in ways that served both to generate and perpetuate inequalities in society. Selfe’s main claim is that educators needed to counteract the trend of treating technology as a neutral tool by focusing on the ways in which use of any technology is subject to ideological pressures.

Selfe (1999) defines ‘computer literacy’ as “…people’s functional understanding of what computers are and how they are used, or their basic familiarity with the mechanical skills of keyboarding, storing information, and retrieving it” (p. 11). It is this tendency toward the functional view of computers that, according to Selfe, complicated literacy education because it serves to “relegate these technologies to the background of our professional lives. As a result, computers are rapidly becoming invisible.” As a result,
“[w]hen we don’t have to pay attention to machines, we remain free to focus on the teaching and study of language, the stuff of real intellectual and social concern” (p. 22).

Selfe offers two definitions of the term ‘technological literacy’ that guide her project. The first is from a 1996 federal project aimed at increasing technological literacy, which defined the term as “computer skills and the ability to use computers and other technology to improve learning, productivity, and performance.” The second definition, which is her stated focus, pushes back against the federal definition, describing technological literacy as “a complex set of socially and culturally situated values, practices, and skills involved in operating linguistically within the context of electronic environments, including reading, writing, and communicating” (Selfe, 1999, p. 11). The first definition, according to Selfe, serves to advance the notion of technology as “simple competence with computers,” which to her obscures the powerful effect viewing technologies as mere tools has on our understanding of what it means to use them.

Viewing technological literacy as social and linguistic practices in electronic environments argues for the need to pay critical attention to both the practices and the environments in which they occur, establishing the role of literacy educators as promoting critical thinking in regard to communication. This approach positions “computer skills and the ability to use computers” to the “technical,” placing it not only outside of literacy education, but as a condition being promoted by powerful institutions that needs to be countered by educational efforts.

In their study of the acquisition of digital literacy, Hawisher et al. define the literacies of technology as “an all-encompassing phrase to connect social practices, people, technology, values, and literate activity, which, in turn, are embedded in a larger
cultural ecology” (2004, p. 679). Contrasting that definition from “computer literacy,” which they define as: “…the skills required to use a computer” (2004, p. 2), Hawisher et al. use the metaphor of “the cultural ecology of literacy” (p. 31) to capture the complexity of an individual’s acquisition of various forms of technological literacy, various because of the features of each ecology: historic, social, economic, educational, and technological.

As the term ‘ecology’ relates to an individual’s interaction with their environment, using this term to describe literacy acquisition emphasizes how the environment acts on and influences the individual’s development. For Hawisher et al. however, the focus on the literacy of technological differentiates computer skills from “reading, writing, and exchanging information in online environments, as well as the values associated with such practices…” (p. 2). This is an important caveat, because it assumes that the study of technologically literate individuals is limited to those already possessing some type of baseline computer skills, and it creates conditions by which variation in the skills to use a computer are irrelevant to their acquisition of “technological literacy.”

**Distinguishing digital literacy from computer literacy.** Douglas Eyman (2015) works to create the basis for “digital literacy” as a requirement for digital rhetoric, but he contrasts digital literacy from “computer literacy.” He states that “…computer literacy is a necessary and embedded component of digital literacy and would be an appropriate name for the functional digital literacy necessary for the development of critical digital literacy and for the use of digital rhetoric” (2015, p. 48). In this way the ability to use a computer as a tool is foundational to digital literacy and digital rhetoric, but using computer literacy as a contrast to digital literacy places it outside of consideration for
Eyman. His stated focus of locating digital literacy begins by asserting that “mere tool use” is not relevant to his discussion.

Scholars have worked to resist technological determinism in the digital age by shaping the discussion in ways that promote critical thinking about computers. They also work to view computer use from the perspective of traditional literacy practices, those that are contextualized, represent individual thought and expression, and are subject to rhetorical principles. But if technological determinism is the mechanism by which social structures are most strongly influenced by changes in technology, then defining the role of literacy instruction as coming after the basic use of technology ignores how students’ technology use may ultimately be determining their practice of literacy.

**Redefining “functional” computer literacy.** StuartSelber (2004) seeks to complicate the definition of ‘functional’ computer literacy, which he believes is in limbo between students who complain they are not taught to use the technology needed to perform scholastically and writing teachers wary of “taking up computer skills” in ways that work against the “social goals of the discipline” (p. 31). His goal is to create a productive inclusion of the use of digital technology into a definition of rhetorical literacy in the digital age, which requires understanding how language and technology come together to create and convey information to others. This moves functional literacy, or technical skills, closer to the field of rhetoric and composition in that it situates technical skills as the gateway to rhetorical literacy. In addition to his focus on the site where language and technology meet, Selber also argues for promoting ‘functional’ aspects of computer use because a literate citizen must have both technical and rhetorical skills. Selber argues, “online writing and communication activities demand rhetorical
interventions” (2004, p. 477), and he works to connect functionality with contemporary writing instruction.

Selber claims that his definition of functional computer literacy can be separated from functionalist approaches through awareness of how these approaches are reductive and work to decontextualize the use of technology. Functionalist approaches are problematic for literacy educators because “…the hallmark of functional literacy as it has been traditionally mapped out in technology settings is a focus on highly specific, stabilized skill sets detached from particular social contexts” (2004, p. 33). Selber’s definition attempts to make space for teaching functional literacy, despite his observation that literacy teachers are further encouraged to avoid it because they assume students are already adept users of computers and that they should be teaching themselves.

For Selber, functional computer literacy can be associated with writing and communication practices in five parameters: educational goals, social conventions, specialized discourses, management activities, and technological impasses. Of greatest interest to the current project is a student’s ability to solve technological impasses “confidently and strategically,” because these activities tend to occur outside of the classroom when students are using computers to complete their projects and because, based on their assumptions, instructors are generally not concerned with how students solve technological impasses. Although solving problems using technology is a foundational skill upon which Selber’s other four dimensions of functional literacy rest, he also follows the trend of deemphasizing these problem-solving skills by discussing them last (framing them as attendant) rather than first (as the foundation).
Selber relies on the 1992 work of Duffy, Palmer, and Mehlenbacher, whose book *Online Help: Design and Evaluation* explores user’s interactions with computers from the perspective of problem solving. According to Selber, “[s]tudents reach technological impasses when they lack the computer-based expertise needed to solve a writing or communication problem.” These impasses are either learning-based (learning to use the technology specifically) or performance-based (attempting to achieve a goal using the technology), and are associated with “stalled progress” and “asymmetrical contributions” to group work (p. 67). Communication teachers, according to Selber, should be more interested in performance impasses since they are closely related to writing and communication. He describes learning-based technological impasses, or those related to the skills needed to operate a computer program, as “less compelling on the grounds that English courses should not be a place where students are simply trained to operate computers and their programs in decontextualized ways” (p. 67). This approach fits with composing instruction because it emphasizes the pursuit of non-technological goals, but it raises a contradiction at the heart of definitions of “digital literacy,” when students encounter performance impasses while they pursue contextualized goals, those goals are replaced with the need to learn more about the computer.

**The irreconcilable nature of “Digital Literacy” as a term.** One problem with understanding digital literacy from a rhetoric and composition perspective is defining it in a way that is applicable only after the use of computers has been established. This is complicated by the fact that digital literacy, along with digital technology as a whole, is an emergent concept that resists stable definitions. These complications are important, because as Alexander et al. point out, “lack of agreement on what comprises digital
literacy is impeding many colleges and universities from formulating adequate policies and programs” (2016, p. 1). The use of digital technology is so pervasive in our everyday lives that generalizing that use can render it a monolithic aspect of the modern age, while the possibilities for human achievement inherent in digital environments are profoundly vast. Basing definitions of digital literacy on understanding digital technology as the path to accomplishing a task puts the focus on what the user is trying to accomplish rather than how, while considerations of how individuals use digital technology tend to emphasize the user’s goals as the motivating factor that carries them past technological difficulties.

The American Library Association (ALA), the oldest and largest library association in the world (ALA, 2019), defines digital literacy as “the ability to use information and communication technologies to find, understand, evaluate, create and use digital information” (ALA, 2013, p. 1), while the New Medium Consortium states that “it is not enough for learners to simply know how to use a technology; they must be able to apply it imaginatively to perform a task or produce an object that would not otherwise be possible without the technology” (Alexander et al., 2016, p. 3). These definitions capture two views of the use of digital technology: it isn’t necessarily inherently valuable in and of itself, and it is indispensable for the activities we value most when using computers. This push-pull view is a common feature of the discussion surrounding digital technology, and I believe something vital is being obscured by this contradiction, specifically the complicated nature of a student’s ability to use computers to complete projects.

Working to create and refine definitions of literacy related to digital technology, composition scholars have generally relied on the self-teaching student model to avoid
the contradiction of digital literacy beyond computer use. But the blind spot engendered by that avoidance contributes to the unease felt by many in the fast-changing digital age. One of the ways scholars have responded to that unease is through an interest in how digital multimodal composition has features that overlap with more traditional writing practices, including the recognition and assertion that multimodality, rather than arising only out of the possibilities inherent in digital technology, has long existed within the realm of writing studies. The next section presents literature on the reclamation efforts surrounding the term multimodal composition as a traditional, and non-digital, aspect of writing.

**Reclaiming Multimodal Composition**

Identifying approaches to writing instruction that promote rhetorical awareness and critical thinking and are based on students’ multiliteracies is complicated by the conflicting nature of technology. In addition to being useful and filled with possibilities, technologies (and technologically adept students) are also a disruptive intrusion into composition instruction. This has resulted in a new iteration of a familiar moral panic which Bennett and Maton (2010) describe as a perennial view of the ever-changing student that has long played a role in composition studies.

Current debates over the implications of technological change for education are similar in focusing upon another, supposedly new kind of learner. The argument is that radical change in education is needed because our traditional institutions do not meet the needs of a new generation of ‘tech-savvy’ learners. These young people are said to be different to all generations that have gone before because they think, behave and learn differently as a result of continuous, pervasive exposure to modern technology. (Bennett & Maton, p. 322)
If we perceive today’s student as self-teaching and broadly confident technology users, in fact as inseparable from technology, then they are radically different in ways that challenge traditional education practices. The amorphous ‘tech-savvy’ students themselves are the existential threat we wrestle with because technology has rendered them inherently incompatible with the traditional values and practices of the field.

In this light, asserting that the multimodal practices promoted by digital technology are a historical part of our mission as literacy educators is both logical and necessary because it allows us to re-assert our relevancy. But positing these practices as not necessarily dependent upon digital technology supports the diminishment of the importance of computer use for multimodal composition. Doing so not only adds to a reluctance to attend to the technical requirements of multimodal assignments, it also takes the digital out of digital literacy, undermining Yancey’s call to respond to “…these new composings and new sites of composings with new energy and a new composing agenda” (2009, p. 7) and leaving just literacy. The NCTE even goes so far as to argue that “[a]n exclusive emphasis on digital literacies is not what most advocates of technology-rich composition advocate. Such an emphasis would limit students’ access to other modes of expression” (NCTE, 2005). However important other modes of expression may be, this argument deemphasizes the use of digital technology to create and share representations of students’ multiliteracies, which are themselves now acquired and shared in digital, multimodal environments. In fact, placing emphasis on non-digital, multimodal composition can serve to work against the need to consider computer use for multimodal projects. The next section presents some of the ways composition scholars have argued that writing and composition have long been multimodal.
Communication has always been multimodal. The argument that all forms of communication are inherently multimodal is both deep and wide. Kress (1997) goes back to the beginning of communication to explore how children rely on the image for their pre-literacy meaning-making, Fleckenstein and Brooke (2003) argue that imbuing words with meaning is based primarily in image, and Ball and Charlton (2015) point out that even the spatial arrangement and font of “plain” text conveys information about the content. Efforts to (re)locate multimodal composition within the field is that this form of composing is a long-standing practice (Palmeri, 2012) that is materially situated (Alexander, 2013), sensory (Ceraso, 2014; Selfe, 2009), and process-oriented (Palmeri, 2012; Shipka, 2011), thereby asserting the applicability of established instructional approaches to multimodal compositions.

These assertions have sometimes been romantic in nature. In *Remixing Composition*, Jason Palmeri (2012) argues that the “multimodal turn” occurring in composition studies rests on a forgotten past of multimodality, including process approaches to writing and material products such as slideshows and collages. Palmeri’s task, “uncovering composition’s multimodal heritage,” (p. 5) is to locate “…alphabetic writing as an embodied multimodal process that shares affinities with other forms of composing” (p. 5). In arguing for compositionists’ unique expertise in multimodality as part of the “invention and revision of alphabetic texts,” he urges resistance to the “overexuberance and the fear that often accompany the introduction of new technologies in our field” (p. 6):

Certainly, emerging digital technologies open up new possibilities for integrating multimodal activities into the writing classroom, but it is important to remember
that composition has always already been a field that has sought to help students draw connections between writing, image making, speaking, and listening. (p. 10)

But the term multiliteracies goes beyond this view, embracing new forms of communication facilitated by new networks and networking that not only challenge the status quo, they expand the boundaries of every aspect of our lives (Gee, 2000).

Jody Shipka (2011) further pushes back against the idea that digital technology is a necessary requirement for multimodal composition, arguing for the value of non-digital, multimodal compositions such as the pink ballet shoes, a student essay handwritten on actual shoes. Shipka uses the case of the shoes, or rather others’ negative or dismissive response to the shoes, as an example of the validity of material multimodal composition, since the student was able to demonstrate an effective writing process throughout the development and presentation of her essay. Locating multimodal composition within more familiar aspects of writing instruction establishes writing instructors as relevant in the digital age; however, doing so pushes the question of the importance of using technology for multimodal compositions further away.

**Writing instruction has a subversive dedication to the material world.** In 2009 Cynthia Selfe explored the history of “aural composing modalities (speech, music, sound)” to argue that the material nature of composing has always been “subsumed by the written word” (p. 616) in composition classrooms. Her argument relocates ‘modalities’ as parts of the nature of human communication that composition instruction has worked to erase in favor of the written word. Selfe presents a compelling case for considering multiple modes as part of students’ meaning-making practices, embracing the forms of communication facilitated by digital technology as part of a resistance effort to traditional print.
Selke’s argument also embraces the call to respect students’ multiliteracies as dependent upon and communicated through complex systems of semiotic resources, and she points out the limiting nature of print as a communicative channel, especially for those “individuals and groups that value multiple modalities of expression” (p. 616). Her essay acknowledges changes in communication practices brought about by the digital revolution, but she is ultimately arguing that composition instruction arose out of multimodal forms of communication that have been overwritten by print, “allowing collegiate teacher[s] of English composition to lose sight of the integrated nature of language arts” (p. 617).

In the end the message is that the rise of digital technology has only reminded us of what we already know; students change, and today’s students are forging identities through new “cultural and communicative codes” (Selke, p. 642), but the essence of composition instruction remains the same. Selke states that “[s]tudents are intuitively aware of these related phenomena, being immersed in them, but they need help understanding the implications of such cultural trends as well as managing their own communicative efforts in ways that are rhetorically effective, critically aware, morally responsible, and personally satisfying” (p. 642). This ‘intuitive’ awareness as a result of ‘immersion’ in new practices describes areas of students’ lives that are already established and beyond the attention of composition instructors. Selke argues that we should be paying attention to our past to help students engage with their future, adding, I argue, to our tendency to teach to a definition of students whose “radical difference” can be best addressed by remaining primarily focused on our own long-standing traditions.
These efforts to explore and understand new areas of literacy while adapting to the digital age have shaped our perceptions not only of students and their needs but also of the value and usefulness of traditional writing instruction in the lives of digital-age students. But these perceptions are the result of trends in framing the project of 21st century writing instruction in ways that render student computer use as both totalizing in their lives but relatively important in the context of the writing classroom, a conflict which can serve to undermine the New London Group definition of multiliteracies as “multiplicity of communications channels and media” which facilitates “the increasing salience of cultural and linguistic diversity” (Cope and Kalantzis, 2000, p. 5).

In addition to the problems with describing students as self-teaching users of technology, having technology as a part of their lives isn’t without complications. The following section explores research into the characteristics of students’ relationship to technology and how requiring the use of digital technology for multimodal compositions without considering the implications of that use may be counterproductive to their educational success.

**Factors Affecting Students’ Use of Digital Technology**

The use of digital technology in school settings has been studied in a variety of disciplines, particularly in library science, education, and media studies. These studies have focused on access to digital technology, instruction in the use of computers, and student engagement with digital technology as part of a variety of educational efforts. There have been studies that query students about the role of technology in their lives, how technology can both distract them and help them learn (Selwyn, 2016), and how it can either enhance or diminish their learning (Kirschner & De Bruyckere, 2017). These
factors present a complex picture that merits continued exploration as we work to incorporate technology into composition instruction.

**Digital technology as a threat to learning.** Furthering the theme of the contradictory aspects of digital technology, throughout the literature, digital technology is described both as a beneficial tool and as a menacing presence in the lives of students. When technology interferes with learning, it tends to do so because of its complexity as a tool and because few students or instructors are fully proficient computer experts (Selwyn, 2016). Despite arguments about goal-driven digital learning, technologies are never fully intuitive tools or transparent pathways to achieving separate goals. Selwyn (2016) counters the literature on the positive potential of digital technology by exploring how students can perceive technology as counterproductive to their learning. Selwyn finds that as a learning tool technology can hamper success because “the propensity for technology to ‘fail’ was described as presenting a constant threat to students’ academic engagement” (Selwyn, 2016, p. 1012). The threat of technological failure is of particular interest here because these types of issues cause students to respond by spending time and energy on the technology, requiring them to pause their primary goal and access separate skills in order to solve their problem before being able to continue.

**The double learning curve.** When students hit a technological impasse when using a computer to complete an academic project, they encounter functional problems that are unrelated to the educational task at hand. This situation is what Becker describes as the double learning curve, or “the cognitive and technical aspects of digital literacy” (2018, p. 6). When goals drive digital literacy behavior, users pursue the goal through the technology, and today’s computers are designed (at least in theory) to feel like seamless
extensions of human will. But when a user cannot make the technology function as desired, they hit an impasse that must be overcome before they can resume their original goal. Technological impasses can commandeer a student’s time, attention, and energy, diverting their efforts from the primary pursuit to a secondary one.

According to Becker, the double learning curve is “one of the biggest obstacles to improving digital literacy skills…it will feel like everything is being thrown at them at once, and there’s no way they can process all that information at once (and retain it)” (p. 7). He describes a situation where learners are required to switch back and forth between the “using to learn” and “learning to use” modes of interacting with technology, complicating the idea that goal-driven use, or using to learn, somehow magically overcomes the difficulty of solving technical problems unrelated to those goals. Goal-driven use of digital technology focuses on product and effect, reduces the importance of the computer as a tool, and contains the implicit argument that the tool is merely the path to the outcome. But that tool for most individuals is not the actual power of the computer but rather the interface, or the screen design allowing digital technology to act as a tool for human use, and that interface can present problems that render it opaque rather than a transparent portal to the digisphere.

**The computer interface.** Since personal computers entered the market in the mid-70s, engineers have worked to understand how humans interact with digital machines and how to best facilitate that interaction, especially for average consumer users. Today most people use computers without much technical knowledge about how computers function. Even as we reach through the screen in pursuit of a goal, most of us don’t understand the technical workings behind the screen; therefore, the screen becomes
the site where technological impasses present themselves to the user. Technological
impasses are an inevitable feature of the goal-driven learning aspect of computer use
because learning to use the computer in and of itself isn’t the goal. The “reach through”
effect of using computers can allow the individual to merge productively with digital
technology in the pursuit of their objective, but when that screen loses its permeability,
the pursuit stalls.

Cultural theorist Branden Hookway (2014) theorizes about the concept of
interface, including how the interface “…defines a system and determines the means by
which it may be known. It takes its place as the zone across which all activity must occur
in order to possess meaning, force, or power” (p. 63). Without the interface there is no
possible use of a system available to the individual, so it is the site of interaction that
must be productively engaged with in order to render the system itself as a tool. A
difficulty inherent in that engagement is that the interface has a dual nature. According to
Hookway, “…the interface holds a familiar albeit indeterminate and even spectral
presence” (p. 1). This “familiar unknown” can be likened to definitions of digital literacy
that emphasize the importance of pursuing goals through the technology. The “familiar”
emphasizes the ease with which we (ideally) are able to dismiss nuts and bolts computer
use, even to the point at which it is difficult to address, while the “spectral” describes
how the interface disappears when we are able to pursue our goals productively.

Hookway describes how the interface works best when it seems to disappear:
“…the illusory disappearance of the interface is an essential aspect of the operation of a
user interface, inasmuch as an operator internalizes the user interface in the course of
working through it, so as to subjectively experience that which is opened up by the
interface in a seemingly direct and unmediated way” (p. 15). In directly mediating the experience the interface must mimic the opposite, and it is this ideal we seek when using computers to achieve goals, but that ideal illusion is based on the programmer’s understanding of the user’s needs and abilities generalized into a constructed boundary that can only be invisible to individuals skilled enough to render it so. Without those skills the interface becomes “…the bottleneck through which all human relations to and through technology must pass” (p. ix), echoing the dual nature of technology as both a “mere tool” and indispensable to the achievement of goals.

When the user lacks knowledge and skill, or when the skills and knowledge they do possess are underdeveloped or a mismatch with the application they are trying to use, the interface becomes perceptible, and the user must switch their attention to attempts to render it invisible once again. For Hookway this makes the technology a tool which is “unready-to-hand,” which “…includes equipment that requires repair or whose user does not possess the knowledge of its use, such that the unready-to-hand is encountered as an obstacle or problem that requires solution…” (p. 126-27). This is the technological impasse which impedes progress toward personally relevant goals. When users are required to focus on the tool over the goal, there is a cost of time, attention, and a loss of engagement that impedes the creative flow possible when the interface is invisible.

**Digital technology and flow.** When the interface is invisible, the individual is best able to increase their digital literacy through the pursuit of goals not necessarily related to the computer as tool. Dan Anderson (2008) applies psychologist Csikszentmihalyi’s term ‘flow’ to the positive productivity that can arise when using technology, but for most of us flow is only possible when the interface is transparent and
the technology invisible or indivisible from our purpose, and that state is dependent upon our skill level. This flow may be hard to achieve for some because “[f]or tasks to have meaning, there must be an optimal correspondence between their degree of difficulty and the skill levels one brings to them. Overly-challenging tasks can limit flow” (Anderson, 2008, p. 44).

Experiencing frustration when encountering technological impasses occurs in part because a user’s skill level may not match the degree of difficulty they encounter, putting them on the second learning curve and stalling their progress. Switching from goal to impasse because of the reduced transparency of the interface destroys flow, and the need to respond to impasses requires time and attention, which interferes with the creative possibilities of digital media (Selber, 2004). These disruptions can even extend beyond the task at hand. According to Selwyn, students reported that technical problems with computers “significantly curtailed the flow of their studies” (Selwyn, 2016, p. 1012). Students working to realize their ideas for a multimodal composition using technology they find difficult to use may lose flow (or not experience it) and become frustrated in the pursuit of their goals.

Creating equitable opportunities for student learning in writing programs is an established goal complicated by assumptions about students’ existing digital practices and by the idea of students as self-teaching computer users. Although this concept of students may be generally accurate in terms of exposure to and use of digital technology, using computers to complete digital multimodal projects may be more complicated than instructors realize. Rather than relying on assumptions, the conflicts attendant upon digital technology require that “the familiar issues of equity and student training still need
to be considered” (Bennett and Maton, 2010, p. 325). Research has shown significant differences in the ways in which individual students acquire digital literacy and how they use computers due to access, early age specialization, economic status, modeling of use, preferences for types of technology, cost, and their typical activities (Bennett & Maton, 2010), all factors affecting what can be described as a student’s “digital readiness.”

**Digital Readiness**

It may be that a more productive concept to use when contemplating students’ ability to use digital technology in school settings is their digital readiness. This term is broad enough to take into account the fact that most students have some experience using digital technology but that those experiences vary widely, including type of technology, frequency of use, and what the technology is used for. Understanding students in terms of their digital readiness also helps us avoid the digital native trap, including ready assumptions that college-age individuals are by nature competent users of technology. According to Becker: “…we need to start thinking of our patrons or students in terms of where they are on the spectrum of digital readiness, which is reflected in attitudes and experiences, not physical traits such as age” (2018, p. 4).

According to researchers in information literacy and the library and information science discipline, goals drive digital literacy behavior (Alexander et al., 2016; ALA, 2013; Becker, 2018; Bennett and Maton, 2010), but since students are in a learning environment requiring them to constantly adapt, they may not be adept at defining their existing computer use for educational goals, and their status as learners may make it difficult to understand the educational goal well enough to achieve it when simultaneously contending with technology. That may result in defaulting to known uses
of computers that aren’t appropriate for the current situation. Bennett and Maton describe “a significant variation in the ways in which young people use technology, suggesting that rather than being a homogenous generation, there is a diversity of interests, motivations and needs” (2010, p. 325). This indicates a need to understand how computer use is individually determined and how merely substituting educational goals for personal ones to motivate the use of technology may not be sufficient support for students whose previous use determines their readiness to use computers in an educational setting.

One response to overcoming the differences in readiness is to establish academic goals that are personally relevant (ALA, 2013). For digital multimodal compositions the argument is that students exploring their personally significant literacy practices are inherently and strongly motivated to overcome difficulties with technology (Anderson, 2008). For Dieterle and Vie (2015) motivation is the key ingredient in successful use of technology, and multimodal projects “…tap into that motivation because students aren’t just composing print essays” (p. 287). This approach describes a bridge between students’ interests and the use of technology, but it puts more focus on the content rather than the need to consider the technological aspects of the assignments. For students, losing focus on their content to solve technological impasses may be particularly detrimental because they lose touch with their source of motivation.

As described above, rhetoric and composition scholars have framed the acquisition of computer literacy as “trial and error, on your own” (Bump, 2013, p. 114-115), through “an extracurricular social co-apprenticeship” (Yancey, 2009, p. 5), “propelled mostly by their own motivations and occurring largely outside of school” (Brandt, 2001, p. 172). Digital-age students don’t just bring their skills with them, they
learned those skills independently or in peer groups through the pursuit of personal interests fostered in digital environments. Taking these skill-acquiring experiences as the basis for an instructional approach is convenient and fits with the digital native/digital immigrant paradigm, but research has shown that not only is it difficult to apply practices acquired socially to academic contexts, “…some aspects of learners’ everyday practices with technology are in fact at odds with the practices valued in traditional academic teaching and assessment” (Littlejohn et al., 2012, p. 551).

For instance, one long-standing and highly valued academic practice is the ability to conduct research. In the digital age it would seem that using computer tools would facilitate research, but a study of students conducting research using a computer in a “naturalistic environment” shows that their existing skills do not necessarily support these types of activities (Taylor, 2012). Steve Kolowich (2011) reports on several studies conducted as part of the ERIAL (Ethnographic Research in Illinois Academic Libraries) project examining students’ academic search activities. Librarians found that students not only overused google, they were not very good at it. The study found that student’s grasp of search logic and the functions of search engines was underdeveloped, and that students “generally treated all search boxes as the equivalent of a Google search box, and searched ‘Google-style’, using the any word anywhere keyword as a default…” And although students struggled to conduct research using library resources, they generally didn’t seek help from librarians because “students were just as unaware of the extent of their own information illiteracy as everyone else.” Kolowich (2011, p. 3). This is a critical consideration for instructors teaching digital multimodal composition because students
who aren’t aware of the limits of their computer skills may not seek additional support when they encounter difficulties.

These examples sketch some of the issues students face when bringing their existing digital literacy practices into academic settings and how assuming digital literacy in students is simultaneously true and false. Further complicating the picture, the skills students do possess may not align with the self-teaching model digital multimodal composition is based on, while requiring students to use computers for schoolwork may not feel as beneficial to students as we think. According to Alexander et al.,

> Today’s students would appear to be more digitally literate (fluent at critical thinking, collaborating, being creative, and problem-solving in digital environments) than previous generations because many have grown up immersed in technology-rich environments, but research has shown that this does not necessarily equate to confidence, especially in an educational context. (2016, p. 2)

Students in composition classes are being asked to draw on a variety of skills and experiences to complete multimodal compositions, but their computer skills and sense of confidence aren’t the only factors contributing to their digital readiness; students also struggle to compose in digital environments using multiple modes due to a lack of experience “writing” in this way.

It isn’t just a student’s existing use of digital technology that complicates multimodal composing, students face multiple challenges with “translating” their previously learned composing practices. DePalma and Alexander (2015) investigated how instructors might support students when moving from essay writing to digital multimodal composition, finding that students attempted to respond to these types of assignments by applying their essay knowledge to the multimodal context. When the
tasks were similar students felt confident, but when they saw tasks as dissimilar, they grew frustrated. They had difficulty with addressing an audience and contending with multiple semiotic resources, in part because multimodal composition demands more attention to form in order to convey the content. If students are struggling to apply their previous computer experience and their previous writing experience to creating digital multimodal compositions, the double learning curve may be too steep for them to successfully overcome.

This literature review attempts to lay out evidence of the complex nature of incorporating digital multimodal composition into first-year composition classes. Although the goals of multimodal composition practices are compelling, the tendency to rely on students as self-teaching users of digital technology complicates how we approach designing and teaching these types of assignments. Research is needed into students’ out of class practices with using digital technology to create multimodal compositions so that we can help students get the full benefit from our classes. The next section is the framework I am using to query the data I have collected for this project. My first goal is to gain insight into how students describe working with technology and how they understand and deal with the technological requirements of digital multimodal composition. My second goal is to contribute to more informed approaches to this new form of instruction. For the variety of reasons presented here, it can be difficult for instructors to consider how students use digital technology to complete multimodal projects outside of class. Learning more from students about the requirements of digital multimodal composition will help to overcome those barriers and reveal more about this important aspect of digital-age learning.
Analytical Framework

Technological Impasses

Since assumptions about students as self-teaching users of digital technology (Brandt, 2001; Bump, 2013; Yancey, 2009) are an integral part of approaches to teaching digital multimodal composition, and since students’ relationships with technology are varied and complex, this study explores how students use digital technology outside of class, particularly how they describe working with technology to achieve personally relevant goals and what they do when they encounter a technical problem that stalls progress toward goals.

According to Duffy et al., a technological problem is not merely “the inability to proceed with a task” (1992, p. 58), rather “[w]e characterize the user’s general problem—lack of knowledge—as an impasse” (p. 58). This lack of knowledge diverts a user’s attention away from their content goals because “[r]emoving the impasse now becomes the focus of the user’s attention” (p. 58). Users don’t fix computer problems, they work to address their lack of knowledge to overcome technological impasses, which creates the competing second curve of Becker’s double-learning curve because they must pause the pursuit of their first goal when they don’t know enough about the program they are using to continue. Duffy et al. “are focusing on users who get stuck in the middle of their job” (1992, p. 59): in other words, the order of their goals is inverted. Instead of learning to create the best multimodal representation of their multiliteracy, the student must now begin learning more about the technology they are using. Being unable to proceed with the primary learning task redefines a student’s purpose.
Duffy et al. point out the difficulty of solving technical problems on your own with limited knowledge when “…diagnosis depends on her interpretation of the situation, that is, on what she already knows. This process is comparable to a student trying to proofread a paper before turning it in. His ability to fix an incorrect sentence depends not only on detecting the error (something is wrong here), but also on understanding where the difficulty lies” (1992, p. 58). Comparing the difficulties students face in solving an impasse with the difficulties they face editing a paper highlights the challenge of solving a problem when you lack the knowledge to do so. More than just problem-solving, the student must recognize and define information or skills missing within themselves and seek the resources needed to fill in those gaps.

Duffy et al. (1992) lay out their “task model,” or the steps involved in identifying and solving a technological impasse. The two main steps are: diagnosing the problem and acquiring the knowledge needed to resolve the impasse. Key to these steps are for users to represent their problem, understand the information they find, and apply what they learned to solve their problem. I use the structure of this task model as the basis of my examination of the data to see if and how students are following this process and if and how they are deviating from it. The goal is to compare the task model with evidence from students’ practical experience in an effort to inform our educational practices when assigning digital multimodal composition projects.

Exploring this information is important because we don’t know enough about what our digital multimodal assignments require of students to determine if the assignments are fair (i.e. each student has a reasonable chance of finishing the assignment without undue burdens of time and effort) or if our assessment practices result in accurate
evaluations of the projects students produce. In other words, without exploring these out-of-class practices, we don’t actually know what we are asking students to do; therefore, we are unable to apply equitable assessment procedures. This study is exploratory, and the results are conceptualizations of how students describe computer use and how they characterize and respond to technological impasses.

**Research Questions**

This study explores how students use digital technology outside of the classroom to respond to multimodal composition assignments. My first aim is to learn from students themselves how they perceive the need to use digital technology for multimodal projects. Next, I use the task model developed by Duffy et al. (1992) to examine the participant responses. This model is broken into two main steps to be taken by the user: diagnosing the problem and acquiring the knowledge needed to solve the impasse. Since diagnosis relies on knowledge, and students may not have the knowledge necessary for an accurate diagnosis, I generalize my research questions, referring to diagnosing the problem as characterizing the problem (how students understand and describe what is going wrong) and responding to it (how students get back to pursuing their original goal). I am also interested in the motivational power of personally relevant goals, and since my case study featured multimodal projects representing students’ identities, my final question explores the ways in which students use technology to create these types of projects; therefore, my research questions are:

How do students in a first-year writing class use digital technology outside of class to create digital multimodal compositions?

Specifically, in what ways do students:

a. characterize the technical problems they encounter?

b. respond when encountering these technical problems?
c. describe working with technology to create multimodal projects and achieve their rhetorical goals?

Using these questions to explore student experiences in a first-year composition course featuring digital multimodal composition projects provides insight into the ways in which students use the technologies required for these types of projects when they are working outside of class and without instruction in using technology. Although I rely on self-reported data, student participants responded to reflection prompts as part of the projects they were completing; therefore, the issues they discussed were fresh in their minds. Furthermore, studying subjective accounts of student experiences allows for an in-depth look into how students cope with the issues that arise out of using digital technology, and including their experiences is crucial to inform the use of digital multimodal composition approaches in first-year composition classes, including assignment design, pedagogical approaches, and assessment strategies.
Chapter 3: Methods

Chapter Overview

The previous chapter presents my review of the literature addressing digital multimodal composition practices as a response from the rhetoric and composition field to the rise of digitally mediated communication. An important point demonstrated by the literature is the tendency to assume that students come to class as self-teaching users of digital technology. Additionally, the field of rhetoric and composition has responded to mainstream efforts to promote “technological literacy” by countering functional approaches with critical approaches to the use of technology and by promoting rhetorical literacy in digital environments. These efforts position composition classrooms and instructors as properly focused on the critical and rhetorical aspects of digital environments, relying on students to either know or figure out how to use the required technology; however, the picture of student as “self-teaching” likely represents complex and varied activities. Taken together, these factors create a gap between what we teach and the expectation that students can use the technology we require. This study explores that gap.

With the expectation that students are largely self-taught users of technology (Brandt, 2001; Bump, 2013; Yancey, 2009), college instructors who teach digital multimodal composition may be relying on students having gained a complex set of skills outside of formal instruction, including the ability to teach themselves how to use new digital technologies. Additionally, researchers assert that students pursuing personally relevant goals are highly motivated to overcome the technical difficulties they encounter (ALA, 2013; Alexander et al., 2016; Becker, 2018; Bennett and Maton, 2010; Dieterle
and Vie, 2015). Although there have been a number of investigations into why we should be incorporating digital multimodal composition practices into first-year writing classes (Anderson, 2008; Bickmore & Christiansen, 2010; Cope & Kalantzis, 2000; Yancey, 2009, among others) more research is needed to explore student practices after they have been assigned projects requiring the use of digital technology for FYC classes.

Of concern for this study is how assuming students are self-teaching users of digital technology may be placing an undue burden on some students if they are held individually responsible for using these technologies to be successful in the class. If personally relevant goals motivate students, encountering technical problems could have a negative effect because students must stop working on their content and focus instead on the use of the computer. This switch is the technological impasse (Duffy et al. 1992), so named because it must be resolved before a user can continue with their content goals. When a user hits a technological impasse, the double learning curve described by Becker (2018) kicks in; students are likely having to switch back and forth between trying to fulfill the assignment requirements and solving problems with using the technology.

We need to know more about students’ out-of-class use of technology to complete multimodal projects, particularly how they respond when they encounter the technological impasses described by Duffy et al. (1992), because these impasses stall student progress toward their content goals and the ability to resolve them varies by student; therefore, the purpose of this study is to investigate how university students work to fulfill the requirements of digital multimodal compositions in a first-year composition class, with a focus on how they describe using computers to create multimodal projects and how they characterize and respond to technical problems. To explore these issues, I
use the following research questions to examine the data I collected from first-year students in a composition class featuring instruction in digital multimodal composition:

- How do students in a first-year writing class use digital technology outside of class to create digital multimodal compositions?
- Specifically, in what ways do students:
  - d. characterize the technical problems they encounter?
  - e. respond when encountering these technical problems?
  - a. describe working with technology to create multimodal projects and achieve their rhetorical goals?

To explore these questions, I designed a descriptive case study of a first-year writing class featuring instruction in multimodal composition that required students to use digital technology to complete each project. Data were collected in the form of structured reflections students completed after using the technology outside of class to complete their assignments. This chapter presents the methodology and methods of the study, with descriptions of the study site and participants, data collection instruments and methods, and my approach to the data analysis supporting this project.

**Methodology**

Since this project is seeking information about how students cope with the need to use digital technology to complete multimodal projects, a descriptive case study is appropriate because it allows the researcher to go in-depth on a specific “case” (Creswell, 2014). For the purposes of this study, the case is a first-year composition class and the units of analysis are the data produced by student participants enrolled in that class. Examining this data with the fine-grained analysis made possible by qualitative methods will provide insight into their experiences. This is particularly true since the behaviors of
interest to this study occur primarily outside of the classroom, and according to Yin, case studies are useful when the focus is on contemporary phenomena that occur within their everyday context and where the investigator does not exert control over the behavior of the subjects (2009). Students in the study completed projects and reflections as part of their coursework in a second-semester writing class, making the data part of their everyday context.

Over the course of the semester, students were prompted to reflect five separate times: one reflection for each of three main writing assignments, an in-class reflection at the end of the semester, and a reflective essay for the final portfolio requirement (see Appendices C, D, E, F, and G). For the project and portfolio reflections, students were instructed to reflect on and write about working on their main writing assignments. This allowed me to collect data on students’ experiences as they confronted the requirements of the assignments outside of class, an important consideration here not only because the class was taught without specific instruction in the use of technology, but because these experiences occur largely beyond the scope of an instructor’s influence and support. Students were asked to report on what they did when they were “on their own” when using technology, including describing how they used digital technology. The final in-class reflection asked students to suggest ideas for how instructors could provide support for students using digital technology to complete multimodal projects and responses will be discussed as part of the implications in Chapter 5.

According to Yin (2009), empirical case studies allow the researcher to link data to the original research questions and reach conclusions about the case. My research questions are designed to query the “case” of a first-year composition class, and the data
are student reflections on their use of technology. Examining this data allows me to capture descriptions of students outside of class to draw a portrait of their efforts when using technology to complete their projects. The case study approach also allows the researcher to establish both a holistic design and an embedded design. The holistic design allows for a global perspective on the issues being studied within a single unit, or data point, of analysis. In other words, this design allows me to examine all of the student responses horizontally across a single aspect of their reflections (e.g., all responses to one question from the first reflection). In contrast, an embedded design allows the researcher to uncover patterns within the same participant (Yin, 2009), which allows me to look at all the responses from one student. My exploratory strategy includes investigating data occurring across the reflections of multiple students.

Case study research design also allows the investigator to develop abstract concepts that can be used to describe the units of analysis as they pertain to the research questions explored in the study (Yin, 2013). In this instance, study participants can be described and compared to one another based on how they characterize and respond to technical problems when using digital technology. For example, coding the data in this way has revealed that Kayla “solved” her technical problems not by researching information alone. When she hit an impasse that she couldn’t resolve, her solution was to switch to another program.

Coding the data organizes pertinent datum into categories that can then be generalized into abstract concepts (Saldaña, 2016). In this case the response to a technical problem was to abandon the technology and try another, which, taken with other data, may mean that students’ efforts to solve technical problems are more complex than self-
teaching themselves how to use the technology. The concepts that emerge are then used to draw inferences about the connections traced through the study aims, research questions, and data. The concepts emerging from these procedures provide insight into how students cope with the need to use technology outside of the classroom. Rather than solving technical problems by seeking knowledge, in the case of Kayla, the strategy of switching programs may have been driven by her desire to remain focused on her content by minimizing technological distraction. These findings may contribute to our understanding of the best ways to support student success when incorporating digital multimodal composition into FYC classes at the university.

First-Year Composition Class Context

The first-year writing program at the university where the study took place has developed Student Learning Outcomes (SLOs) to guide the development of course content (see Appendix B). Included is Outcome C: Writing as a Process, which requires that students leaving the class are able to: “use multiple approaches for planning, researching, prewriting, composing, assessing, revising, editing, proofreading, collaborating, and incorporating feedback in order to make [their] compositions stronger in various mediums and using multiple technologies” [emphasis added], so the use of digital technology as part of a first-year composition class is an expectation for all students.

Study site. The 75-minute class met twice weekly for 16 weeks and took place entirely in a PC computer lab on the main university campus, allowing students to work on their projects during limited workshop portions of class. Throughout the semester, students completed six developmental assignments and three main writing assignments
that each included a guided reflection component containing questions about the student’s use of technology. All assignments were submitted through Blackboard Learn, the campus learning management system (LMS).

**Study Participants**

The pool of participants for this study comprised students enrolled in the student investigator’s first-year, second semester writing course during Spring semester, 2017 at a university in the southwest. Since my aim is to explore aspects of student behaviors when using digital technology to complete multimodal compositions, the course featured digital multimodal assignments. Students were informed of the emphasis on technology and multimodal composition at the beginning of the first class and before they were recruited to participate in the study. There is an emphasis on digital technology and multimodal composition approaches in our writing program, including one required digital multimodal composition project in the first-semester composition class. Since this was a second-semester writing class, participants had already been exposed to at least one multimodal project requiring the use of digital technology.

At the beginning of the semester students responded to a survey collecting demographic information on the class (see Table 1 below). Twenty-two students from the class agreed to participate and were consented into the study under an IRB (Institutional Review Board)-approved consent form (see Appendix A). To reduce the chance of coercion, consent was administered by the Principal Investigator (the supervising researcher required by the university IRB for dissertation research projects), who visited the class in my stead and informed the students that their
participation was voluntary and that their personal information would be protected if they chose to participate. The Principal Investigator also informed the class that the student investigator would have no knowledge of who had chosen to participate in the study or who had not until after final grades were submitted at the end of the semester.

**Demographic information of participants.** At the beginning of the semester students were administered a survey collecting demographic information (see Table 1 below. SWAs are short writing assignments and MWAs are main writing assignments discussed in detail later in this chapter).

<table>
<thead>
<tr>
<th>#</th>
<th>Pseudonym</th>
<th>Age</th>
<th>Ethnicity</th>
<th>Projects Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>“Kayla”</td>
<td>18</td>
<td>Hispanic</td>
<td>All SWAs and MWAs</td>
</tr>
<tr>
<td>2</td>
<td>“Sabrina”</td>
<td>19</td>
<td>Multiethnic/multiracial</td>
<td>All SWAs and MWAs</td>
</tr>
<tr>
<td>3</td>
<td>“Ravi”</td>
<td>20</td>
<td>Asian</td>
<td>All SWAs and MWAs</td>
</tr>
<tr>
<td>4</td>
<td>“Emily”</td>
<td>19</td>
<td>Hispanic</td>
<td>All SWAs and MWAs</td>
</tr>
<tr>
<td>5</td>
<td>“Pete”</td>
<td>21</td>
<td>White</td>
<td>All SWAs and MWAs</td>
</tr>
<tr>
<td>6</td>
<td>“Anthony”</td>
<td>19</td>
<td>White</td>
<td>All SWAs and MWAs</td>
</tr>
<tr>
<td>7</td>
<td>“Louis”</td>
<td>19</td>
<td>Hispanic</td>
<td>All SWAs and MWAs</td>
</tr>
<tr>
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<td>“Christopher”</td>
<td>19</td>
<td>Hispanic</td>
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</tr>
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<td>9</td>
<td>“Jessica”</td>
<td>—</td>
<td>No response</td>
<td>All SWAs and MWAs</td>
</tr>
<tr>
<td>10</td>
<td>“Xavier”</td>
<td>19</td>
<td>Hispanic, White</td>
<td>All SWAs and MWAs</td>
</tr>
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<td>19</td>
<td>White</td>
<td>All SWAs and MWAs</td>
</tr>
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<td>White</td>
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<tr>
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<td>—</td>
<td>No response</td>
<td>All SWAs and MWAs</td>
</tr>
<tr>
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<td>19</td>
<td>White</td>
<td>All SWAs and MWAs</td>
</tr>
<tr>
<td>15</td>
<td>“Ava”</td>
<td>19</td>
<td>Hispanic, White</td>
<td>All SWAs and MWAs</td>
</tr>
<tr>
<td>16</td>
<td>“Josephine”</td>
<td>—</td>
<td>No response</td>
<td>All SWAs and MWAs</td>
</tr>
<tr>
<td>17</td>
<td>“Ajay”</td>
<td>18</td>
<td>Asian</td>
<td>All SWAs and MWAs</td>
</tr>
<tr>
<td>18</td>
<td>“Jack”</td>
<td>20</td>
<td>White</td>
<td>SWAs 3 and 4, no MWAs</td>
</tr>
<tr>
<td>19</td>
<td>“Michael”</td>
<td>19</td>
<td>White</td>
<td>All SWAs and MWAs</td>
</tr>
<tr>
<td>20</td>
<td>“Adam”</td>
<td>25</td>
<td>White</td>
<td>All SWAs and MWAs</td>
</tr>
<tr>
<td>21</td>
<td>“Jorge”</td>
<td>18</td>
<td>Hispanic, Multiethnic/multiracial</td>
<td>All SWAs and MWAs</td>
</tr>
<tr>
<td>22</td>
<td>“Kevin”</td>
<td>19</td>
<td>White, African American/Black</td>
<td>All SWAs and MWAs</td>
</tr>
</tbody>
</table>

**Table 1: Participant Demographic Information**

In addition to their pseudonym, age, and ethnicity, Table 1 also shows a tally of the assignments completed by each participant. Three participants did not complete the survey. The participants who did complete the survey ranged in age from 18 to 25 years old with an average age of 19. Of the 19 participants who completed the survey, eight
reported their ethnicity as white (42 percent), five as Hispanic (26 percent), four as multiethnic/multiracial (21 percent), and two as Asian (11 percent). Of the 22 students who agreed to participate in the study, three students: Christopher, Amanda, and Jack, are excluded from the analysis because they did not complete a significant number of assignments, and none of the assignments they did complete included a reflection. The data for the remaining 19 participants were included in the analysis, and the results reported in the next chapter include data from all of the 19 participants.

Methods of Data Collection

Data-Collection Instruments

Since the purpose of this study is to explore how university students work to fulfill the requirements of digital multimodal compositions in a first-year composition class, the data collection instruments were designed to query students directly about their efforts to use technology to complete digital multimodal projects. Student participants were aware of the focus of my study, and I continually sought to be transparent about the purpose behind the questions I asked. I designed the various data collection instruments and procedures described in this section; all were approved by the university IRB, and all instruments were accessed by the student participants through Learn.

The three major writing assignments (MWAs) and final portfolio completed by the class were structured as multimodal composition projects requiring the use of digital technology. Each assignment required students to apply a given rhetorical situation to define a specific audience and purpose when composing their response and required multimodal elements and the selection of a digital medium appropriate to the audience and purpose. Each assignment also included a written reflection based in part on
questions keyed to the technology required to complete the task and to the rhetorical choices students made while they worked.

**Multimodal Composition Assignments and Technologies**

The three main writing assignments were each supported by two short writing assignments. All assignments were based on the Student Learning Outcomes for English 120 and themed as explorations of students’ identities. They included a narrated documentary of their “Family” History project (family was broadly defined to include significant identity groups), a Rhetorical Analysis of a Song (students were asked to choose a song related to the topic they explored for their first project), and a Time Capsule containing items representative of the student’s understanding of their identity that they explored and developed over the course of the semester.

The topic of the first sequence was exploring identity. The first short writing assignment was a handwritten brainstorming activity focused on important aspects of the student’s identity. After completing a hand-drawn web diagram, students used Microsoft Word processing software to write up their findings. The second short writing assignment was a “pitch” presentation requiring students to develop their ideas for their narrated documentary projects. Students were required to create a four-slide (minimum) PowerPoint presentation that featured multiple modes and then record themselves narrating the presentation using a screencapture program. The assignment suggested using Jing, Screencast-o-Matic, or another program of their choice.

The narrated documentary (see appendix C) was an exploration of the student’s identity based on material developed in the short writing assignments. The final project was to be a video or audio presentation five to seven minutes long that included multiple
modes (the audio project needed sound beyond the student’s narration), and students were initially required to use a video creator such as Apple’s iMovie or Windows Movie Maker. Students reported significant concern about using video creator software, and during an open forum the class voted to include the options of using one of the screencapture programs used for the short writing assignment to record a narrated PowerPoint presentation or to use the PowerPoint recording feature to narrate their presentation. Many students explored their cultural identity, such as Kayla and her status as Mexican American and Brandon who considers himself a modern-day Viking, while others described how their experiences contributed to their identity, such as Adam serving in the Navy or Sabrina coming to terms with how people perceive her as a multiracial individual.

For the final narrated documentary project, students used Screencast-O-Matic to record a PowerPoint most frequently (7) followed by a PowerPoint with recorded narration (5). One (1) student used Jing to record a PowerPoint and one (1) used QuickTime to record a PowerPoint. Three (3) students submitted YouTube videos without referencing how they recorded their projects and one (1) submitted an Mp3 of an iMovie recording of their desktop. One (1) student used an iPhone to create an Mp3 file.

For the rhetorical analysis of a song students chose a song they felt represented their identity in some way. For example, Emily chose the country song “Humble and Kind” because those were values stressed by her parents, while Jorge chose the Mexicana Ranchera song “Volver, Volver” to represent his pride in his Mexican heritage. The first SWA was a preliminary analysis of the song written in Word, and the second was a short PowerPoint presentation featuring that analysis supported by multimodal resources.
representing the song and the analysis. The second SWA was presented to the class. For
the rhetorical analysis students were required to create a multimodal project presented on
a website that featured their rhetorical analysis along with supporting images, videos, and
links. Students were instructed to choose between Weebly, Wix, or Google Sites for their
website project. Students most frequently chose Weebly (14) for their projects over Wix
(3) or Google Sites (2).

For the time capsule students created a personal virtual time capsule featuring
items representative of their identity. The SWAs for this project were one written
assignment (rhetorical analysis of the manifest of the time capsule Cupaloy) in Word and
one multimodal PowerPoint presentation (preliminary items and descriptions) delivered
to the class. The final time capsule was created from images or audio clips captured by
the student and incorporated into a PowerPoint presentation or a website that also
featured an essay and written descriptions of the items. Students represented themselves
with items from their lives such as a book of poems, musical instruments, religious items,
pictures of family, and even items such as clothing and toothbrushes. Most students chose
to use PowerPoint for this assignment (14) over the website builders Weebly (2) or Wix
(2). One student completed the assignment using Prezi.

Student participants in this study completed these assignments by developing a
response to the specific requirements for topic and content, using multiple modes to
represent their topics, using a variety of digital technologies to complete their projects,
and reflecting on their projects as they went along, providing insight into their
experiences. In some cases, students were required to use a specific technology, while in
others they were given a choice. Understanding how students are using digital
technology, including how they characterize the technical problems they encounter and respond to those problems, is important if we are to ensure they get the full benefit of multimodal composition assignments.

**Reflection Questions**

The reflection questions asking specifically about technology for each of the MWAs are presented in tables 2, 3, and 4 below. The left-hand column presents the reflection question and the right-hand column presents the research purpose each question served. The same reflection prompt was used for the rhetorical analysis and time capsule. This reflection was adapted from Shipka’s Statement of Goals and Choices (2009).

<table>
<thead>
<tr>
<th>Narrated Documentary Reflection Question</th>
<th>Research Question Addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why is the medium (the video or sound project) the best choice for your audience and your purpose?</td>
<td>In what ways do students describe working with technology to create multimodal projects?</td>
</tr>
<tr>
<td>What were your impressions of the technology you chose to compose with for this project?</td>
<td>In what ways do students describe working with technology to create multimodal projects?</td>
</tr>
<tr>
<td>What rhetorical decisions impacted your choice of technology?</td>
<td>In what ways do students describe working with technology to create multimodal projects?</td>
</tr>
<tr>
<td>What were the challenges with technology that you faced in this project?</td>
<td>In what ways do students characterize the technological problems they encounter?</td>
</tr>
<tr>
<td>How did you overcome these challenges?</td>
<td>In what ways do students respond to those problems?</td>
</tr>
<tr>
<td>What was easiest about using this technology? What did you like?</td>
<td>In what ways do students describe working with technology to create multimodal projects?</td>
</tr>
</tbody>
</table>

**Table 2: Narrated Documentary Reflection Questions**

<table>
<thead>
<tr>
<th>Rhetorical Analysis Reflection Question</th>
<th>Research Question Addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>What website builder did you decide to use and why?</td>
<td>In what ways do students describe working with technology to create multimodal projects?</td>
</tr>
<tr>
<td>How did you design and format your website and why?</td>
<td>In what ways do students describe working with technology to create multimodal projects?</td>
</tr>
</tbody>
</table>
How does this design further your interpretation of the song you chose?

In what ways do students describe working with technology to create multimodal projects?

How did the various choices you make allow you to accomplish your goals for this assignment?

In what ways do students describe working with technology to create multimodal projects?

<table>
<thead>
<tr>
<th>Time Capsule Reflection Question</th>
<th>Research Question Addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHOICES: What specific rhetorical, material, methodological, and technological choices did you make in service of accomplishing the goals articulated above?</td>
<td>In what ways do students describe working with technology to create multimodal projects?</td>
</tr>
</tbody>
</table>

Table 3: Rhetorical Analysis Website Reflection Questions

Table 4: Reflection Question added for Time Capsule

These questions were intended to focus students’ attention on the how the rhetorical considerations of their multimodal compositions connected to use of digital technology and how their choice of technology carried with it affordances and constraints. The aim was to prompt students to consider how their goals were achieved through the use of technology and get them to reflect on how using technology has a “nuts and bolts” aspect that interacts with their rhetorical purpose. Asking students to report on their impressions of the technology and the challenges they faced allowed me to collect data on their experiences encountering technical problems.

Data Collection

After submitting final grades, I retrieved the participants’ signed consent forms from the Principal Investigator and assigned a random number and pseudonym to each participant. Since all assignments, including the in-class reflection, which was written as an electronic journal, were submitted through Learn, I was able to download each participant’s data, including their in-class reflections, project reflections, and final portfolios and replace all names with each participant’s randomly assigned number and a pseudonym. I then created holistic documents for each data point (all student responses to
each specific prompt) and aggregate documents (each individual student’s responses to every prompt), then organized the data into folders for each participant.

**Data Analysis**

My approach to coding corresponded to the three broad areas of investigation I established: how participants characterize the technical problems they encountered, how they responded to these problems, and how they describe using technology to create multimodal projects and pursue rhetorical goals. The data collection instruments used in this study asked participants to narrate their experiences with using technology. The reflections asked participants to report on the technology generally and the specific difficulties they faced when using digital technology for their projects, which is an indication of encountering a technical impasse as described by Duffy et al. (1992).

**First-Cycle Structural Coding: Investigative Topics**

For my first-cycle coding I follow Saldaña’s (2016) description of structural coding, a method in which the researcher determines what topics of inquiry they are pursuing with their research questions and captures those topics in conceptual phrases, or structural codes, which can be productively applied to the data. Structural coding allows the researcher to determine which segments of data relate to which research question, but the development of structural codes that apply to the segments goes beyond mere organization. According to Saldaña, “Structural Coding both codes and initially categorizes the data corpus to examine comparable segments’ commonalities, differences, and relationships” (p. 98). This coding process allows the researcher to determine the connections between research questions and data, to perform a preliminary
assessment of how the data actually answer the research questions, and to create comparisons between different instances of segments of data.

In this case, I use structural coding to connect my research questions to the data by identifying where in the data students characterize technical problems, how they responded to those problems, and where they provide descriptive information about using technology to create their projects. In addition to prompting students to describe working with technology to create multimodal projects, I am interested in the difficulties they faced and how they responded. Since students were answering questions as part of a project reflection, I was concerned that they would avoid reporting on negative aspects of their experience. To encourage honest reporting, the reflection questions asked about challenges specifically to focus students on where they had difficulties using the technology.

Following Saldaña (2016), my first research question corresponds to the first part of the reflection question reproduced below in bold. This example demonstrates the application of the Structural Code identifying where in the data students characterize technical difficulties:

Research Question: In what ways do students characterize the technical problems they encounter?

Structural Code: ¹CHARACTERIZATIONS OF TECHNICAL PROBLEMS

²REFLECTION QUESTION: What were the challenges with technology that you faced in this project and how did you overcome these challenges?”

PARTICIPANT: “I FACED A LOT OF CHALLENGES USING THIS NEW TECHNOLOGY. At first I was recording with Jing, However I KEPT RUNNING OUT OF TIME because JING ONLY ALLOWS YOU TO RECORD FIVE MINUTES. I then TRIED USING QUICKTIME but I found that it WAS MORE DIFFICULT TO USE WITH POWERPOINT. Finally, I downloaded Screen-O-Matic. It was easier to work with, however unlike Jing, IT
so many of my failures were recorded in the final project. I liked the challenge of
learning this new technology. However, it was very frustrating that IF YOU
MESS UP DURING THE RECORDING THERE IS NO WAY TO UNDO
IT, you’re forced to start over. I fixed most of these issues by watching youtube
videos or googling it.” (Kayla, participant #1)

The phrases highlighted in uppercase gold lettering indicate where the structural code
applies. Applying this structural code allows me to identify how Kayla characterized the
technical problems she encountered.

The first statement referencing a technical problem from this passage is: I
FACED A LOT OF CHALLENGES USING THIS NEW TECHNOLOGY. The use
of the term “this new technology” indicates that Kayla grouped all of the programs she
experimented with together and that she was unfamiliar with the programs before being
asked to use them. Characterizing her use of the programs as presenting “a lot of
challenges” indicates that she perceived the screen capture programs as difficult to use
for the assignment and that the technical problems she encountered were numerous.

The second problem is: I KEPT RUNNING OUT OF TIME, indicating that
when using the technology to record her narrative, she was repeatedly forced to stop her
efforts due to time constraints, which may be related to her ability to operate the
software.

The third problem, JING ONLY ALLOWS YOU TO RECORD FIVE
MINUTES, indicates that recording capacity of the program she was using (Jing) was
not sufficient for her project goals.

The fourth problem, QUICKTIME…WAS MORE DIFFICULT TO USE
WITH POWERPOINT, indicates that she encountered additional difficulties when
attempting to use an alternate screen capture program with the presentation software she was required to use for her recording.

The fifth problem, **IT [Screencast-O-Matic] DOES NOT LET YOU PAUSE THE RECORDING**, indicates that the features of the program were structured in a way that was difficult to use and incompatible with her purpose (a formal, edited narration rather than an informal recorded discussion).

The sixth and final problem Kayla identified was also with Screencast-O-Matic, **IF YOU MESS UP DURING THE RECORDING THERE IS NO WAY TO UNDO IT**, indicating that she was unable to stop the program and address her mistakes while she was recording.

Based on the class vote on including more technology choices for MWA #1, Kayla opted to record her project using screen capture technology. The statement Kayla makes at the beginning of the reflection summarized her use of the technologies as presenting **A LOT OF CHALLENGES**, or numerous and frequent difficulties, which groups each of the impasses she details in her reflection into one extended challenge. Taken together, these characterizations indicate that the capabilities of the screen capture programs Kayla used for her narrated documentary were not entirely useful to her due to limitations on their recording capability.

The second research question: *In what ways do students respond when they encounter these technical problems?* represents the topic of inquiry: **examining student responses to technical problems** which leads to the Structural Code: **RESPONSES TO TECHNICAL PROBLEMS**. The second research question corresponds to the second part
of the reflection question reproduced in bold below. The following excerpt is from the same student’s narrated documentary reflection.

**Research Question:** In what ways do students respond when they encounter these technical problems?

**Structural Code:** RESPONSES TO TECHNICAL PROBLEMS

**Reflection Question:** What were the challenges with technology that you faced in this project and how did you overcome these challenges?”

**Participant:** “I faced a lot of challenges using this new technology. At first I was recording with Jing. However I kept running out of time because Jing only allows you to record five minutes. I THEN TRIED USING QUICKTIME but I found that it was more difficult to use with PowerPoint. Finally, I DOWNLOADED SCREEN-O-MATIC. It was easier to work with, however unlike Jing, it does not let you pause the recording so MANY OF MY FAILURES WERE RECORDED IN THE FINAL PROJECT. I liked the challenge of learning this new technology. However, it was very frustrating that if you mess up during the recording there is no way to undo it, YOU’RE FORCED TO START OVER. I FIXED MOST OF THESE ISSUES BY WATCHING YOUTUBE VIDEOS OR GOOGLING IT.”

The phrases in uppercase blue lettering indicate where the Structural Code applies.

Applying this Structural Code allows me to identify how Kayla responded to the technical problems she encountered. The overarching problem she encountered was that each of the programs she tried presented challenges that required her to adapt again and again.

The second problem was running out of time with Jing, and her response, I THEN TRIED USING QUICKTIME, indicates that she switched technologies from Jing to QuickTime.

Her third problem was when QuickTime presented too many challenges (possibly too many to enumerate in her reflection) for her to overcome when attempting to use the program to record her PowerPoint presentation, and her response, I DOWNLOADED.
SCREEN-O-MATIC, indicates that she once again switched programs in response to the problem.

Her fourth problem was recognizing that Screencast-O-Matic did not allow her to pause her recording. Her response, MANY OF MY FAILURES WERE RECORDED IN THE FINAL PROJECT, indicates that she completed her recording within the constraints of the program by accepting a final recording she wasn’t fully happy with.

Her characterization of the fifth problem captured the crux of her issue. Since none of these programs presented viable options for her to pause or edit her recording, she stated that YOU’RE FORCED TO START OVER, indicating that her response to the constraints of each technology was to continually attempt to record the same thing over and over in three different programs.

Grouping of all the technical problems under the I FACED A LOT OF CHALLENGES USING THIS NEW TECHNOLOGY characterization indicates that part of her response was to use both suggested technologies, along with QuickTime, in order to overcome a series of similar problems. This leads to her final response: I FIXED MOST OF THESE ISSUES BY WATCHING YOUTUBE VIDEOS OR GOOGLING IT, indicating that one strategy for responding to each problem was to seek online help.

In one brief passage Kayla describes a series of technical problems that were “very frustrating” and potentially required a great deal of effort to respond to by experimenting with each of three different programs, learning about their limitations through repeated attempts at recording her narration, and using online sources of help to try and overcome each impasse. Kayla’s ultimate response to these series of problems was to determine that there were no other viable options available to her to switch to at
that point; therefore, she felt required to leave her “failures” in the final project, an indication that the online help she found wasn’t entirely useful.

What emerges from this coding cycle is that the assignment inadvertently placed Kayla in an untenable position. The assignment required her to create a PowerPoint presentation and record the presentation with a five to seven-minute narration. She was only instructed to use one program, either Jing, Screencast-O-Matic, or another screen capture program of her choice; however, she ended up attempting to create the project using three different programs, each presenting difficulties she was unable to overcome due to the expected length of the presentation and the available recording capacity of each program.

The final response, characterized by Kayla as a recording that included her “many failures,” indicates that the she turned in a project that she was not fully satisfied with due to her needing to cope with using digital technology. In attempting to meet the assignment requirements and her own standards for her recorded narration, Kayla expended many times the expected effort based on the assignment requirements.

The third research question: *In what ways do students describe working with technology to create multimodal projects?* represents the topic of inquiry: **examining student descriptions of working with technology to create multimodal projects**, which leads to the Structural Code: DESCRIPTIONS OF WORKING WITH TECHNOLOGY TO CREATE MULTIMODAL PROJECTS. The following excerpt is from Kayla’s time capsule reflection. The research question corresponds to the reflection question reproduced below in bold. This example demonstrates the application of the
Structural Code that I apply to the reflections from each of the class projects and the portfolios produced by student participants.

Research Question: In what ways do students describe working with technology to create multimodal projects?

Structural Code: 3DESCRIPTIONS OF WORKING WITH TECHNOLOGY TO CREATE MULTIMODAL PROJECTS

1REFLECTION QUESTION: What specific rhetorical, material, methodological, and technological choices did you make in service of accomplishing the goals articulated above?

PARTICIPANT: “Having a future and somewhat “imaginary” audience calls for awareness and accountability. My goals included representation of my identity, representation of my generation, and designing a website that complimented my choice of items and theme. I decided to create a website using WIX over using PowerPoint because I FELT THAT A WEBSITE WOULD ALLOW ME TO CREATE A MORE VISUAL REPRESENTATION OF MY ROOM. I ALSO WANTED CERTAIN THINGS GROUPED TOGETHER THAT WOULD NOT FIT ON ONE SLIDE. I CHOSE CERTAIN BACKGROUNDS THAT I FELT CREATED A HOMEY FEEL. THE FIRST PAGE IS A BACKGROUND OF BUILDING WITH WINDOWS TO SYMBOLIZE “THE OUTSIDE LOOKING IN.” THE REST OF MY PAGES, BESIDES THE LAST PAGE, CONTAIN PICTURES OF MY ROOM.” (Kayla, student #1)

The phrases highlighted in uppercase green lettering indicate where the Structural Code applies. Applying this Structural Code allows me to identify how Kayla described using the technology to create her multimodal project.

The first statement describing working with technology from this passage is: I FELT THAT A WEBSITE WOULD ALLOW ME TO CREATE A MORE VISUAL REPRESENTATION OF MY ROOM. This statement references the new technology Kayla used for this project, describing how working with it required learning both the assignment requirements and the technology. Using both learning and struggling together creates a contrast of positive (learning) and negative (struggling) activities, which may indicate a conflicting experience.
The second description is: **I ALSO WANTED CERTAIN THINGS GROUPED TOGETHER THAT WOULD NOT FIT ON ONE SLIDE**, indicating that Kayla worked with familiar technology that she needed practice with to regain or sharpen her skills. Referencing the use of familiar and new technology in the same sentence indicates that Kayla experienced a range of encounters with technology while working on this project and that those encounters were valuable (learning new skills), difficult (she struggled), and helpful (she was able to regain her skills).

The third description: **I CHOSE CERTAIN BACKGROUNDS THAT I FELT CREATED A HOMEY FEEL.** describes the technology as the “best option” or fit for the participant’s audience, indicating that Kayla considers digital technology a powerful way to convey information using multiple “tools” or modes. This description indicates that the participant is reflecting on her content and using digital technology to connect with her audience in ways she feels will have a strong effect on them.

The last description: **THE FIRST PAGE IS A BACKGROUND OF BUILDING WITH WINDOWS TO SYMBOLIZE “THE OUTSIDE LOOKING IN.” THE REST OF MY PAGES, BESIDES THE LAST PAGE, CONTAIN PICTURES OF MY ROOM,** endorses digital technology (in this case a website builder) as a powerful rhetorical tool due its capacity for recording and conveying multiple modes.

**Second-Cycle Coding: Theming the Data**

My approach to second-cycle coding also follows Saldaña (2016), this time in his description of theming the data. According to Saldaña, theming the data is the application of an “extended thematic statement rather than a shorter code” (p. 199). Searching for themes presented in the data allows the researcher to capture “what is going on”
according to the participants and to distill those themes down to short summaries that are more broadly applicable throughout the data. My aim is to investigate how students use digital technology outside of class by analyzing how they describe what it’s like working with technology when they are creating multimodal projects, how they characterize technical problems, and how they respond to technical problems. To isolate the data representing descriptions of technology, I used the first-cycle structural codes described above to look for emerging themes in the data. In other words, I applied my second-cycling coding to my first-cycle coding to look for themes in their reporting.

For the question: *In what ways do students characterize the technical problems they encounter?* students were asked: “What were the challenges with technology that you faced in this project?” I used the same reflection response used to demonstrate my approach to Structural Coding to theme the data. Specifically:

*Research Question: In what ways do students characterize the technical problems they encounter?*

Structural Code: ¹CHARACTERIZATIONS OF TECHNICAL PROBLEMS

²REFLECTION QUESTION: *What were the challenges with technology that you faced in this project* and how did you overcome these challenges?”

Working with the established structural codes for each student’s reflections, my next step was to develop generalizations for each structural code, first within the reflections from each student and then across all participants to determine if the themes were inclusive of the pertinent data.

<table>
<thead>
<tr>
<th>Participant 1: Kayla</th>
<th>¹CHARACTER OF TECH PROBLEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>What were the challenges with technology that you faced in this project?</td>
</tr>
</tbody>
</table>
PARTICIPANT: 1 I FACED A LOT OF
CHALLENGES USING THIS 2 NEW
TECHNOLOGY. At first I was recording
with Jing, However 3 I KEPT RUNNING
OUT OF TIME because 4 JING ONLY
ALLOWS YOU TO RECORD FIVE
MINUTES. I then tried using
5 QUICKTIME but I found that it WAS
MORE DIFFICULT TO USE WITH
POWERPOINT. finally, I downloaded
screen-o-matic. It was easier to work with,
however unlike Jing, 6 IT DOES NOT
LET YOU PAUSE THE RECORDING
so many of my failures were recorded in
the final project. I liked the challenge of
learning this new technology. However, it
was very frustrating that 7 IF YOU MESS
UP DURING THE RECORDING
THERE IS NO WAY TO UNDO IT,
8 YOU’RE FORCED TO START OVER.
I fixed most of these issues by watching
youtube videos or googling it.”

1 Challenges were numerous
2 Challenges were based on a lack of familiarity with the technology
3 Challenges were characterized as requiring repeated efforts
4 Challenges were caused by limitations within programs
5 Challenges were getting programs to work together
6 Challenges were inflexibility in the design of programs
7 Challenges were a lack of editing capabilities
8 Challenges were having to make multiple attempts to use the technology as required

Table 5: Themeing for Research Question #1
For the question: *In what ways do students respond when they encounter these technical problems they encounter?* students were asked: “How did you overcome these challenges?” I continued theming the data on the same reflection response used to demonstrate my approach to Structural Coding. Specifically:

**Research Question:** *In what ways do students respond when they encounter these technical problems?*

Structural Code: 2RESPONSES TO TECHNICAL PROBLEMS

3REFLECTION QUESTION: What were the challenges with technology that you faced in this project and how did you overcome these challenges?”

<table>
<thead>
<tr>
<th>Participant 1: Kayla</th>
<th>2RESPONSES TO TECH PROBLEMS How did you overcome these challenges?</th>
</tr>
</thead>
<tbody>
<tr>
<td>PARTICIPANT: I faced a lot of challenges using this new technology. At first I was recording with Jing, However I kept running out of time because Jing only allows you to record five minutes.</td>
<td>1Overcoming problems means trying another program</td>
</tr>
<tr>
<td>THEN TRIED USING QUICKTIME but I found that it was more difficult to use with PowerPoint. finally,</td>
<td>1Overcoming problems means trying another program</td>
</tr>
<tr>
<td>DOWNLOADED SCREEN-O-MATIC. It was easier to work with, however unlike Jing, it does not let you pause the recording so</td>
<td>2Overcoming problems means accepting a result that you aren’t happy with</td>
</tr>
</tbody>
</table>
I liked the challenge of learning this new technology. However, it was very frustrating that if you mess up during the recording there is no way to undo it. You’re forced to start over. I fixed most of these issues by watching YouTube videos or googling it.

3 Overcoming problems means accepting that you don’t have control
4 Overcoming problems means accessing online help

Table 6: Themeing for Research Question #2

The research question: In what ways do students describe working with technology to create multimodal projects? related to how the participant pursued their goals for the project. Participants were asked: What specific rhetorical, material, methodological, and technological choices did you make in service of accomplishing the goals articulated above? I use the same time capsule reflection response from Kayla to demonstrate my approach to Structural Coding to theme the data.

Structural coding approach for the third research sub-question:

Research Question: In what ways do students describe working with technology to create multimodal projects?

Structural Code: 3DESCRIPTIONS OF WORKING WITH TECHNOLOGY
1REFLECTION QUESTION: What specific rhetorical, material, methodological, and technological choices did you make in service of accomplishing the goals articulated above?

Theming the data for question three based on the first-cycle Structural Coding demonstrated:
Participant 1: Kayla

What specific rhetorical, material, methodological, and technological choices did you make in service of accomplishing the goals articulated above?

PARTICIPANT: Having a future and somewhat “imaginary” audience calls for awareness and accountability. I choose to go with the theme of my room because it made it easy to connect the objects to my identity. It also represented my identity as an introvert. I decided to create a website using WIX over using PowerPoint because I felt that a website would allow me to create a more visual representation of my room. I also wanted certain things grouped together that would not fit on one slide. I chose certain backgrounds that I felt created a homey feel. The first page is a background of building with

1 Students use technology to incorporate visual modes of representation
2 Students use technology to control the spatial design of their visual representations
3 Students use technology to select background colors/images that represent theme
4 Students use technology to include images symbolically
Using the structural codes as the starting point for theming the data allows me to develop the shorter Structural Codes into more extended thematic statements. Returning to the first question: In what ways do students characterize the technical problems they encounter? The reflection question was: What were the challenges with technology that you faced in this project?” I began organizing the thematic statements by listing them in order then looking for commonalities that would allow me to categorize them (Saldaña, 2016):

1. Problems were numerous
2. Problems were based on a lack of familiarity with the technology
3. Problems were characterized as requiring repeated efforts
4. Problems were caused by limitations within programs
5. Problems were getting programs to work together
6. Problems were inflexibility in the design of programs
7. Problems were a lack of editing capabilities
8. Problems were having to make multiple attempts to use the technology as required

After reviewing the data and the coding some potential themes emerge, and these themes can be re-arranged and grouped under four “metathemes” (Saldaña, 2016):

**I. Technical problems are common**

1. Problems are numerous
II. Technical problems are repetitive

3 Problems are characterized as requiring repeated efforts
8 Problems are having to make multiple attempts to use the technology as required

III. Technical problems are based on the user’s lack of knowledge

2 Problems were based on a lack of familiarity with the technology
5 Problems were getting programs to work together

IV. Technical problems are limitations within the programs

4 Problems were caused by limitations within programs
6 Problems were inflexibility in the design of programs
7 Problems were a lack of editing capabilities

After grouping the themes into metathemes, I created an analytical memo of this instance of data. In other words, I can summarize the themes of Kayla’s experience with digital technology in a way that addresses my research question: In what ways do students characterize the technical problems they encounter?

**Analytical memo:** Using digital technology presents issues that appear to require a considerable amount of time and attention as part of a student’s ongoing learning process. Problems with digital technology are common, and they tend to be repetitive instances of similar difficulty. Some problems are due to a lack of knowledge on the part of the user and require the user to learn more about the program to use it, while others are due to program limitations.

This set of codes and themes are then applied to the other instances of data collected to see if they “fit” the data overall and allow for generalizations to be made.

For the question: How do students respond when encountering these technical problems? students were asked: “How did you overcome these challenges?”

1 Overcoming problems means trying another program
2 Overcoming problems means trying another program
Overcoming problems means accepting a result that you aren’t happy with
Overcoming problems means accepting that you don’t have control
Overcoming problems means accessing online help

Grouping these themes results in three metathemes:

I. Achieving your goal requires trial and error
   1. Overcoming problems means trying another program
   2. Overcoming problems means trying another program

II. “Success” means compromising your goals
   3. Overcoming problems means accepting a result that you aren’t happy with
   4. Overcoming problems means accepting that you don’t have control

III. Working with programs requires outside sources of information
   5. Overcoming problems means accessing online help

which lead to an analytical memo describing student response to technical problems:

Analytical memo: Responding to technical problems requires a series of trial-and error activities to determine what problems are preventing students from moving forward with their content goals. Using outside sources of help allow students to solve some problems, but even with that knowledge students may compromise or adjust their project goals due to the limitations they encounter.

For the final question: In what ways do students describe working with technology to create multimodal projects? students were asked: “What specific rhetorical, material, methodological, and technological choices did you make in service of accomplishing the goals articulated above?” Coding resulted in the following themes:

1. Students use technology to incorporate visual modes of representation
2. Students use technology to control the spatial design of their visual representations
Students use technology to select background elements that represent theme

4 Students use technology to include images symbolically

5 Students use technology to represent physical spaces

Developing metathemes based on Kayla’s reflection requires consideration of her goals for the project and how she pursued them: “Having a future and somewhat “imaginary” audience calls for awareness and accountability. I chose to go with the theme of my room because it made it easy to connect the objects to my identity. It also represented my identity as an introvert.” Kayla’s mention of her audience at the beginning of her response indicates that she took their needs into account with her design. She wanted to get her message across to them by creating a virtual room containing digital captures of the items she chose to represent her identity. Choosing items representative of her introverted nature led to the theme of a “room” where the items are in their real-life context, while representing her identity in her private space emphasized how her introverted nature seeks solitude. With these goals and choices in mind, analyzing Kayla’s reflection reveals the following metathemes:

**I. Using technology allows students to create highly visual compositions**

1 Students use technology to incorporate visual modes of representation

**II. Students use technology to create abstract meaning**

4 Students use technology to include images symbolically

5 Students use technology to represent physical spaces

**II. Students use multiple modes within digital spaces to reinforce their theme**

2 Students use technology to control the spatial design of their visual representations

3 Students use technology to select background colors/images that represent theme
These metathemes are then combined into an analytical memo of their use of technology to create multimodal projects:

**Analytical memo:** In creating their multimodal projects students take advantage of the visual possibilities in digital environments to convey a message to their audience. That message can be reinforced through the use of images and design choices that are symbolic. Using multiple modes in digital spaces allows students to reinforce their message in complex arrangements.

With these analytical memos I can analyze the results of my coding process of the full data set to determine if the themes I developed describe commonality. I can modify my themes to accommodate differences in data points to achieve a more accurate representation of the case study as a whole. When combined, these memos also form the basis of a thematic narrative that responds to my overarching research question: *How do students in a first-year writing class use digital technology outside of class to create digital multimodal compositions?*

Using digital technology presents issues that appear to require a considerable amount of time and attention as part of a student’s ongoing learning process. Problems with digital technology are common, and they tend to be repetitive instances of similar difficulty. Some problems are due to a lack of knowledge on the part of the user and require the user to learn more about the program to use it, while others are due to program limitations.

Responding to technical problems requires a series of trial-and-error activities to determine what problems are preventing students from moving forward with their content goals. Using outside sources of help allows students to solve some problems, but even with that knowledge students may compromise their project goals due to the limitations they encounter.
In creating their multimodal projects students take advantage of the visual possibilities in digital environments to convey a message to their audience. That message can be reinforced through the use of images and design choices that are symbolic. Using multiple modes in digital spaces allows students to reinforce their message in complex ways.

These two coding cycles reveal how one student worked her way through multimodal projects using digital technology. Theming the data results in metathemes that can be applied to other instances of data to see if the themes account for the ways in which students characterize and respond to technical problems and how they use digital technology to create their projects. Applying the themes allows me to refine existing themes and add additional ones to account for as much of the data as possible.

Accounting for the data in this way connects the data to my research questions and results in a series of concepts that can be used to describe students’ relationship to digital technology within this context.

The aim of this project is to investigate the out-of-class practices of students using digital technology to complete multimodal composition projects. Examining how students describe working with technology to create multimodal projects, characterize the technical problems they encounter, and respond to those problems allows me to identify categories that can be used to organize those practices under themes. Creating metathemes allows me to examine and organize additional data to determine how student practices are similar and how they differ. Using holistic and embedded design in this study allows me to look at each student individually and compare their practices to one another. I use structural coding and theming to determine where and how those practices are described and, after applying the metathemes to multiple instances of data, what those practices indicate about students’ use of digital technology. This chapter presents the
methods developed to explore my research questions along with my approach to data coding and analysis. In the next chapter I will explore the results of my analysis and discuss the findings.
Chapter 4: Results

Recap and Outline

So far in this dissertation I have presented the background and motivation for the current study and the rationale for my research questions. The methods chapter presents the context for the study, including a discussion of case study methodology, the participant and study site descriptions, data collection instruments, methods of data collection, and coding strategies. Since my overall aim is to explore the ways in which students are using technology outside of class to complete their projects, I have collected data from FYC students who were in the process of completing digital multimodal projects. These projects were based on explorations of identity and required the use of multiple forms of digital technology. Specific research aims include informing the term “self-teaching” as it relates to students using digital technology. I pursue this aim by querying students about problems they encounter while using digital technology and how they respond to those problems. I am also interested in the motivating effect of personally relevant goals, and I investigate this by exploring how students used digital technology to pursue their project goals.

I collected data in the form of project reflections from 19 participants in a FYC class requiring the use of digital technology for multimodal compositions. All of the participants who completed the class supplied data that are included in this analysis. The class was based on the assumption that students are self-teaching users of technology requiring no specific instruction in the use of the technology required by the assignments. In addition to requiring technology, assignments were focused on exploring students’ identities and practicing the rhetorical situation as described by the English department
writing program. After collecting the student project reflections, I coded the data based on my established coding strategies. This chapter presents the results of that coding and a discussion of how these findings inform my research questions.

**Coding Strategies**

The coding strategies followed Saldaña (2016) and consisted of first and second cycles aimed at identifying and analyzing pertinent data. *Structural coding* was used first to identify where in the data students described technical problems, their responses to those problems, and descriptions of how they used digital technology to create their multimodal projects and achieve their rhetorical goals. This coding strategy allowed me to find relevant information within the data set and connect those datum with the pertinent research questions. Based on the research questions, the first-cycle structural codes were: 1) **Characterizations of Technical Problems**, 2) **Responses to Technical Problems**, and 3) **Descriptions of Working with Technology to Create Multimodal Projects/Achieve Rhetorical Goals**.

The second-cycle coding approach was *themeing the data*, which consisted of developing phrases describing the sections of data identified through the first-cycle coding. These phrases act as the bridge between the data and the research questions. In other words, after the structural codes indicate where the data relating to the research questions are, the themes developed are *how* the data answer the research questions (Saldaña, 2016). After developing a set of themes for the data relating to each of the first-cycle categories found for each of the research questions, the themes were analyzed and grouped under “metathemes” or abstractions of the initial themes. I then returned to the
data repeatedly to test if the themes accounted for all of the data or if themes were superfluous. The first structural code: **CHARACTERIZATIONS OF TECHNICAL PROBLEMS**, identified each instance in the data where participants described difficulties with using digital technology. This code identified where in the data participants provided information that can begin answering the first research question: *In what ways do students characterize the technical problems they encounter?* Theming this data yielded 7 themes that are organized into two metathemes. The final themes and metathemes are represented in Table 8 below:

<table>
<thead>
<tr>
<th>Research Question: In what ways do students characterize the technical problems they encounter?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural Code: <strong>CHARACTERIZATIONS OF TECHNICAL PROBLEMS</strong></td>
</tr>
<tr>
<td>Using the program to produce the required product</td>
</tr>
<tr>
<td>Problems were based on a lack of familiarity with the technology</td>
</tr>
<tr>
<td>Problems were caused by limitations within programs</td>
</tr>
<tr>
<td>Problems were coordinating multiple modes in a specific program</td>
</tr>
<tr>
<td><strong>Encountering Specific Technological Issues</strong></td>
</tr>
<tr>
<td>Problems were inconsistent tech performance</td>
</tr>
<tr>
<td>Problems were not owning the necessary technology</td>
</tr>
<tr>
<td>Problems were difficulties with environment/interruptions</td>
</tr>
<tr>
<td>Problems were difficulty downloading programs/uploading assignments</td>
</tr>
</tbody>
</table>

Table 8: Final Themes for Research Question #1

The second structural code: **RESPONSES TO TECHNICAL PROBLEMS**, yielded data relating to the second research question: *In what ways do students respond
when encountering these technical problems? Theming the data resulted in 6 final themes that are organized into two metathemes, both represented in Table 9 below:

<table>
<thead>
<tr>
<th>Research Question: In what ways do students respond when they encounter these technical problems?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural Code: <strong>RESPONSES TO TECHNICAL PROBLEMS</strong></td>
</tr>
<tr>
<td>Responding to problems requires trial and error</td>
</tr>
<tr>
<td>Responding to problems requires repeated efforts</td>
</tr>
<tr>
<td>Responding to problems requires finding a workaround</td>
</tr>
<tr>
<td>Responding to problems requires choosing “easier” programs based on experience</td>
</tr>
<tr>
<td>Responding to problems requires modifying your approach</td>
</tr>
<tr>
<td>Responding to problems requires accessing online help</td>
</tr>
<tr>
<td>“Success” can mean compromise</td>
</tr>
<tr>
<td>Responding to problems requires accepting a result not completely successful/you aren’t completely happy with</td>
</tr>
</tbody>
</table>

**Table 9: Final Themes for Research Question #2**

The third and final structural code: **DESCRIPTIONS OF WORKING WITH TECHNOLOGY TO CREATE MULTIMODAL PROJECTS/ACHIEVE RHETORICAL GOALS**, yielded data that begin to answer the final research question: *In what ways do students describe using technology to create multimodal projects and achieve rhetorical goals?* The data identified were then organized into the final 8 themes and two metathemes represented in Table 10 below:

<table>
<thead>
<tr>
<th>Research Question: In what ways do students describe using technology to create multimodal projects and achieve rhetorical goals?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural Code: <strong>DESCRIPTIONS OF WORKING WITH TECHNOLOGY TO CREATE MULTIMODAL PROJECTS/ACHIEVE RHETORICAL GOALS</strong></td>
</tr>
<tr>
<td>Using technology and multiple modes to design</td>
</tr>
</tbody>
</table>
Incorporate multiple modes/media to show rather than just tell

Select background elements that represent theme

Express yourself creatively

**Using technology and multiple modes to construct and persuade the audience**

Use multiple modes symbolically

Incorporate physical presence

Make ideas accessible/reinforce message

Control directional flow of information/direct audience attention

Make a project entertaining, interesting, and enjoyable for the audience

<table>
<thead>
<tr>
<th>Table 10: Final Themes for Research Question #3</th>
</tr>
</thead>
<tbody>
<tr>
<td>The following sections present the results of the data analysis based on the two-cycle coding strategy described previously, followed by a discussion of how those results relate to my problem statement and inform my research questions. (Note: some quotes from individual participants are lightly edited to conform to standard conventions).</td>
</tr>
</tbody>
</table>

**Reflection Results**

**Research Question #1**

In order to explore where students characterized the problems they faced using the technology, the first research question: *In what ways do students characterize the technical problems they encounter?* became the structural code:

**CHARACTERIZATIONS OF TECHNICAL PROBLEMS** identifying sections in the data relating to technical problems. The reflection questions students responded to that produced these data are:
From the narrated documentary: What were your impressions of the technology you chose to compose with for this project?

From the rhetorical analysis: What were the challenges with technology that you faced in this project?

How did the various choices you made allow you to accomplish your goals for this assignment?

From the time capsule: What specific rhetorical, material, methodological, and technological choices did you make in service of accomplishing the goals articulated above?

Coding the data for this question revealed 7 themes grouped into two metathemes, and the results of this analysis are presented here, along with examples of how students characterized the technical problems they encountered while using the program to produce the required product (metatheme #1) and overcoming specific technological issues (metatheme #2).

Metatheme #1: Using the Program to Produce the Required Product

The first metatheme deals with difficulties students had when trying to use technology to create a specific product. Each of the assignments in the class was multimodal and needed to be composed and presented using digital technology. These requirements created different experiences for different students.

Problems were based on a lack of familiarity with the technology. Students struggled with their projects when they didn’t know how to use a program or when they didn’t know how to use a program to make a specific product, and the characterizations of these types of technical problems ranged from minor issues with formatting to more significant issues that were difficult or impossible to solve. PowerPoint was a popular choice throughout the course and caused the fewest issues for students. Although Pete was unable to figure out how to add videos to his PowerPoint presentation (reflection #3),
most problems had to do with what one student termed “the fancier design options” (Adam, reflection #1) students wanted to use when composing their projects. Some students experienced difficulties managing their website builders, but these problems too were relatively minor. Brandon was unable to control the spacing between lines of text on his website (reflection #2), while Luis used a template with various navigation buttons featuring titles that he couldn’t change and which remained in his final submission (reflection #2).

Some issues were based on students not knowing what resources were available to them or the extent of the functions of those resources. For example, Michael described himself as a sophisticated technology user, “… I was always on the computer. I became very familiar with programs such as QuickTime, Microsoft Office, and even more advanced software such as Photoshop and Sony Vegas Pro” (reflection #1). However, he struggled to use the screen capture options suggested in the narrated documentary assignment: “At first, I did have a problem with my technology. I did not understand how to use a screen casting program” (reflection #1). Based on his experience, he abandoned the programs students used for SWA #1 (Screencast-O-Matic and Jing) in favor of QuickTime, but even then he struggled to understand the extent of his resources: “It took me about a week to figure out that QuickTime Movie Player actually records the screen, and it’s a program that is built into my computer” (reflection #1).

Ava, who completed her narrated documentary as an ambitious “Draw My Life” video, also had to overcome her lack of familiarity with the programs available to her. As she used her iPhone to record her drawing she would make small mistakes such as her head moving into the shot, but her lack of knowledge about the recording technology cost
her time: “…if I messed up I would restart because I didn’t realize how easy it is to edit it out until I uploaded the movie to iMovie” (reflection #1). Jorge’s lack of awareness of the editing capabilities of his chosen program also caused unexpected problems: “First I did not know how to use Screencast-O-Matic. I pressed record started talking and kind of forgot what I said so I stopped the recording but I did not know that if I stopped that would be it and could not go back or at least that is what I thought. I had to re audio it and submit it” (Jorge, reflection #1).

A lack of familiarity was most problematic for students who were using a new type of program. This was particularly true for the screen capture programs. In addition to not clearly understanding what type of product these programs produce, students’ lack of familiarity with the features of Jing and Screencast-O-Matic became the most frequently cited problem over the course of the semester. The next theme, program limitations, is linked to the lack of familiarity theme because some students made repeated efforts to use these programs before they became familiar enough with them to overcome the limits.

**Problems were caused by limitations within programs.** Throughout the semester many students reflected on their struggles to use the technology to create their projects: “I had a couple of hiccups along the way, apparently Weebly doesn’t have an ‘undo’ button” (Anthony, reflection #2), but the video or screencapture options for the narrated documentary caused the most difficulty for the most students. For this assignment students presented a research project on their identity group recorded as an audio or video documentary and including their recorded narration.

This requirement appeared to create a bind for the students. Every student who completed the assignment chose to include visuals along with some form of audio
recording of their narration, but the class as a whole was very reluctant to use a video
creator program. After realizing their hesitation, we held a class vote, and they decided to
include the options using a screencapture program to record a narrated presentation on
their desktop or creating a PowerPoint presentation with their narration recorded within
the program itself. Although it is possible that they wanted the PowerPoint option due to
a lack of recording equipment and/or editing software, recording narration (and
oftentimes music) with some form of visual presentation, even on a desktop, came with
other difficulties.

Students who used the screencapture method (at least eight, although three
assignments were submitted as YouTube videos with no reference to the program used)
were expected to choose just one program; however, even after being required to use a
screencasting program for their SWA #2 assignment, multiple students reported trying to
use two or more programs due to difficulty making the programs work in the way
required by the assignment. For example, Kayla started with using Jing, but she kept
running out of time while trying to record her narration over her PowerPoint “…because
Jing only allows you to record five minutes. I then tried using QuickTime but I found that
it was more difficult to use with PowerPoint. Finally, I downloaded Screencast-o-Matic.
It was easier to work with, however unlike Jing, it does not let you pause the
recording…” Kayla went on to say, “it was very frustrating that if you mess up during the
recording there is no way to undo it, you’re forced to start over” (reflection #1). This was
a familiar complaint, and it appears as if students made their PowerPoint, decided on their
narration, then discovered that Jing wouldn’t let them record long enough to include all
of the material they had planned. Xavier struggled “because you could not record longer
than five minutes, which I found to be extremely difficult to record at exactly 5 minutes” (reflection #1).

Along with running out of recording time while using Jing, students struggled with Screencast-O-Matic’s lack of editing capacity. Luis said it was “irritating” that “I couldn’t go back and fix my mistakes” (reflection #1), while James stated that “The biggest challenge I faced was the fact that I could not edit” (reflection #1). Not being able to pause the recording or edit required repeated efforts by students who had to start and restart their projects repeatedly. Ravi tried Jing but “recording was hard as you go on you may make a mistake and if you were to correct it, you must repeat it again” (reflection #1). Although almost all of the students were able to get through the assignment using a screencapture program, it was clearly a time-consuming process for many.

**Problems were coordinating multiple modes in a medium.** After problems with using screencapture programs, one of the more challenging aspects of digital multimodal composing reported by students was using technology to capture and/or coordinate modes simultaneously. This was especially apparent in the narrated documentary, which required students to create a multimodal composition that could be played by the viewer.

When Ava began her “Draw My Life” project (one of only two that were recorded in a non-virtual environment), there were multiple coordination issues she needed to resolve. She drew her story on a whiteboard while recording it using her iPhone, but her final project also included music and narration. After figuring out how to position her iPhone to record while she drew, the other complications became apparent: “This solved the problem of how I would record it, but what about narrating it? Do I narrate while
drawing, or record over after? Through some trial and error I realized I definitely had to record over after. Sadly this stuck me with a different problem, what do I say? And more importantly what do I draw?” (reflection #1).

Brandon reflected on these complications from an audience perspective: “Making the audio and pictures go smoothly together was a real challenge. Each picture must go along with what I am saying at all times. The narration and music must connect the audience with what they are looking at” (reflection #1). For Adam: “It was also a challenge to add videos and music to the presentation while at the same time providing narration” (reflection #1), while Kayla combined her audience concerns with the difficulty she had juggling multiple modes/media: “The most challenging part was figuring out how to use the technology in a way that helped reach my audience and managing so much at once” (reflection #1). These realizations capture a series of practical issues some students faced: when a program is recording multiple modes unfolding in real time, coordination is an important consideration.

**Metatheme #2: Overcoming Specific Technological Issues**

The first metatheme covers students trying to create their digital multimodal projects and is focused more on how students struggled to use the technology as required. The second metatheme relates to students struggling just to get the technology to work or to use technology under their specific circumstances. Instead of encountering difficulties trying to create a project, this metatheme encompasses breakdowns of some sort, from ambient noise or other recording issues to downloading programs and uploading assignments.
Problems were inconsistent technological performance. Although problems varied in intensity, technologies consistently presented difficulties for students struggling to use them; furthermore, the performance of different pieces of technology was not predictable for some students, and that unpredictability was usually difficult to diagnose or understand. As a result, students were required to respond to problems that were vague or indeterminate in nature. In addition to not really understanding what was going wrong, oftentimes students were unable to find the cause of the problem and as a result they were required to change strategies rather than solve their issues successfully.

Anthony encountered a series of inexplicable setbacks with his narrated documentary: “At first I wasn’t able to record the music playing off of my computer, so I had to find a different program.” He tried to record and then discovered one of his modes was missing for some reason, and being unable to diagnose the problem he switched to another program: “The second program that I used recorded my voice and the music perfectly though! Unfortunately, the problems with this program were much worse.” In this case, “solving” his first problem by using a new program resulted in more difficulties: “I recorded my entire presentation on this program, only to find that although the audio recorded all the way through, only my title slide was recorded from my screen! I tried several times and wasn’t able to make it work” (reflection #1). Anthony went from the slides being recorded with no music to the music being recorded with no slides, and ultimately the result was unsolvable.

Anthony wasn’t the only student who struggled with recording his narration. Xavier struggled with his microphone: “I had to adjust my voice level, and distance from the microphone due to the fact that it would sometimes not pick up my voice and I had to
completely re-record the video” (reflection #1), and even when he was able to capture a usable recording he wasn’t able to control the outcome of his project because he couldn’t upload that type of file extension to Learn: “So I don’t know what keeps happening to my audio when I export the project to YouTube but it’s very low volume. In iMovie it’s loud and you can hear me perfectly but it’s like YouTube destroys it. Anyways, I hope you can hear or if you can’t, headphones worked for me” (reflection #1).

Kevin’s project also suffered from audio difficulties that remained in the final submission: “One challenge I had was the audio was not cooperating with my voice and as a result, the balance between my voice and the music was off” (reflection #1). In addition to the program limitations, this is another area where the introduction of an unfamiliar technology created problems for students. For some, once they figured out how to start a recording, they weren’t able to complete their narration or go back and edit. On top of those limitations, some also struggled with the need to capture audio off of their machine or through a microphone due to some unknown breakdown in the chain of equipment and programs.

Problems were difficulties with environment/interruptions. Although this wasn’t commonly reported on, it bears mentioning that one student reported difficulty with where to work since he needed school resources to complete his project. James describes what is likely an issue for students attempting to work in environments over which they have little control: “I had to record in the computer lab of my dorm, and this RA was being a real…meanie to me. She kept passive aggressively opening the door in the middle of my recording, even after I told her I only needed a couple of minutes…and she agreed!! It was a rough one” (reflection #1). In this case, James was unable to control
the environment he was working in, and that proved to be an additional difficulty he had to overcome.

**Problems were not owning the necessary technology.** Although students could choose which program to use to record their narrated documentary, for some the complexity of using a screencapture program was exacerbated by limitations with their personal technology. James struggled with having to record a narration for his documentary, stating: “I do not have any of the software or equipment to do it myself!” (reflection #1). For James this meant using the technology available in the dorm computer lab, which created the difficulties described above, added to his frustration, and became part of his history with the resident advisor.

The two screencapture programs recommended for SWA #1 that multiple students went on to use for the narrated documentary had both free versions available for download, but some students were unable to use these versions without including logos that became part of their projects. Sierra expressed dissatisfaction with the advertising that may have been shared by other students as well: “I hated that the free version of Jing has their logo in the back of my entire slideshow presentation” (reflection #1).

For Ava and her “Draw My Life” projects, the technology limitations went beyond computer programs: “I don’t have a camcorder that isn’t from the 80’s and doesn’t record on tape, so I had to modify. The camcorder at least had a tripod, so I just jury-rigged my phone to the tripod and adjusted it to height of my whiteboard in the garage” (reflection #1). Ava’s available technology and efforts to overcome her technological limitations fall outside the range of the other students’ experiences, but
having to use multiple technologies to complete her project is an interesting example of a
student using digital technology to create a multimodal project outside of class.

Problems were difficulty downloading programs and uploading assignments.

Students attempting to use the screencapture programs not only had to work out how to
use them, they had to figure out how to download them and how to upload the various
file extensions created when they saved their projects. As with the
environment/interruptions theme, this was not frequently reported, but Sierra’s
experience is an illustration of how seemingly insignificant aspects of an assignment may
pose significant difficulties for some students. Sierra narrates her efforts to obtain and use
a screencapture program for her narrated documentary project:

> The second software I used or should say tried to use was Screencast-O-
Matic, with this one I tried to download about 5 or 6 different times and
every time it was almost downloaded on my computer, my computer
would notify me that I was about to download several different
viruses…So my computer did not like Screencast at all and I never had the
chance to actually work with it…I came across one program which I do
not remember the name but it just kept failing to download every time I
tried to download (it took about 25-30 minutes each time it was going
through the process of downloading then failing)… after I downloaded it
(Adobe) online it took me to my library and took me to the download that
said “setup” I clicked on it and after 4 hours of “setting up” I was
completely lost and confused on what was going on. I finally gave up with
adobe as it was too much work for something that is so simple I finally
went back to Jing. (reflection #1)

Sierra’s struggle to find and download the program she needed to complete the
assignment used up an inordinate amount of time, far more time than the original
assignment was predicated on requiring.

Creating multimodal projects using different forms of technology also resulted in
difficulties for students attempting to upload their completed projects who ran into
trouble with the school’s LMS. Michael reported that Learn wouldn’t accept an upload
his .mov file, but Jorge never could figure out why his submission didn’t work: “When I tried submitting it to learn it did not let me. It did not load and I did not know if it was because it was an audio and from an application. I did not know what to do” (reflection #1). Finally, in addition to her struggles finding and downloading a workable version of a screencapture program, Sierra even had difficulty uploading a completed assignment: “I first started off with Windows Movie Maker and it was a lot easier to work with than Jing but in the end when I had to upload it and submit my final project it did not deliver and I had to go back to the drawing boards i.e. finding a new way to record and narrate my power point” (reflection #1).

**Research Question #2**

After identifying where and how students encountered problems with using the technology required to create and present their projects, the next research question: *In what ways do students respond when they encounter these technical problems?* became the structural code: \(^2\text{RESPONSES TO TECHNICAL PROBLEMS}\) identifying where and how students responded to those problems. Next the data were themed for analysis, resulting in six themes and two metathemes. The reflection questions students responded to that produced these data are:

- From the narrated documentary: How did you overcome these challenges (with the technology)?
- From the rhetorical analysis: What website builder did you decide to use and why?
- From the time capsule: What specific rhetorical, material, methodological, and technological choices did you make in service of accomplishing the goals articulated above?
The results of this analysis are presented here, along with examples of how responding to problems requires trial and error (metatheme #1) and how “success” can mean compromise (metatheme #2).

**Metatheme #1: Responding to Problems Requires Trial and Error**

Trial-and-error approaches were the most commonly reported responses to technological problems, but these efforts weren’t just the traditional try one way and then find another way. Students frequently attempted the same set of steps over and over in their attempts to use the technology to complete their projects.

**Responding to problems requires repeated efforts.** One of the issues concerning responding to problems that students cited most frequently in their project reflections was the need to make repeated efforts. These repeated efforts occurred as students used a specific program again and again trying to complete their projects and as they moved from program to program trying to overcome the difficulties they encountered. Jorge described this process as a journey: “I faced some challenges with technology on my journey doing my project” (reflection #1), and Anthony “had a couple of hiccups along the way…” (reflection #1). When Pete was trying to combine multiple sources of audio into his narrated documentary, he struggled with the recording equipment: “It took me a while to work out how to do this…” (reflection #1), and when James decided to use the website builder Weebly after a long time “…it took me awhile just to figure out all of the tools to use…” (reflection #2).

Students referenced making multiple attempts to get their technology to work: “…you’re forced to start over” (Kayla, reflection #1). These repeated efforts were usually required when one program wouldn’t perform as expected, so the solution was trying
another program, which sometimes led to more problems “Unfortunately, the problems with this program were much worse” (Anthony, reflection #1). Xavier struggled to record his SWA #2 presentation using a screencapture program: “I think, overall, I had to record my first video for SWA 2 about 20 times before I got it right, and it didn’t even play either, and I believe I had to record my final video about 25-30 times before I finally got it right, and it was frustrating to say the least…” (reflection #1).

Ava referenced “some trial and error” in her efforts to capture a recording of her narrated documentary project, while Sierra described her struggles in a vivid way. After she completed her PowerPoint presentation, recording the slides on her desktop along with her narration became a significant issue requiring multiple failed attempts to download and operate a screencapture program successfully. Describing herself as “Irritated and relentless” upon not being able to upload a completed recording, Sierra wrote: “I had to go back to the drawing boards i.e. finding a new way to record and narrate my power point” (reflection #1). Time and effort were generally spent in ways described by the next theme, students met their problems with workarounds rather than solutions.

**Responding to problems requires finding a workaround.** Students hit roadblocks at many stages of their “journeys” through completing their assignments that followed the pattern of trial-and-error problem solving. Kayla’s work followed a “first I tried,” “then I tried” pattern as she sought a program that would allow her to meet all her assignment requirements with minimum difficulty. Anthony also moved from program to program seeking a way through: “I had issues with several different screen capture programs when I was trying to record my final presentation” (reflection #1).
In addition to struggling to use the technology successfully, some students needed a workaround when it came time to submit their assignment. After completing his recorded presentation using iMovie, Michael was unable to upload his assignment to Learn because the file extension wasn’t accepted, stating: “I overcame that by uploading the file on YouTube and sending you the YouTube link in a word document as well as in the comment section on Learn” (reflection #1). After hitting a roadblock while trying to upload, Michael “covered all the bases” by duplicating his efforts to submit successfully.

Jorge also found a workaround to upload his project: “I did not know what to do and then it just occurred to me to send it to my professor through my e-mail” (reflection #1). Sierra faced the same problem as Michael and Jorge with her attempts to upload, but she took a much longer path to a workaround. After being unable to record a presentation she was happy with using Jing, she used iMovie. She was satisfied with that result, but she was unable to upload it due to the .mov file extension. She went on to try and download three more programs unsuccessfully before returning to Jing.

**Responding to problems requires choosing “easier” programs based on experience.** For the rhetorical analysis students were required to make a website presenting their analysis of a song that was related to their identity. Students were encouraged to choose any website builder they liked, and in the reflection prompt they were asked: “What website builder did you decide to use and why?” Students reported making strategic decisions about their choice based on their previous experience. Most of the responses show that a program being perceived as either difficult or easy to use weighed heavily in the decision, an indication that students are likely aware of how time-
consuming digital technology can be. In these cases, the workaround was to mitigate that problem in advance by avoiding difficulty/seeking less stressful options.

Some students chose a program simply because it was not the program they were required to use in another setting. Ravi stated: “I decided to work with Weebly because last time I had worked with Google Site, I did not like much about it…” (reflection #2). Ravi went with Weebly because he found that the drag and drop functionality made working with content much easier than he perceived it would have been with Google Sites. Ava also followed an avoidance strategy: “In building my website, I chose to use Weebly for the website builder because I have used Google Sites for past products and found it incredibly difficult to understand” (reflection #2). In these cases, students preferred a new program other than the one they were familiar with.

Beyond choosing a website builder for her rhetorical analysis, Ava’s negative experience with website builders generally influenced the type of technology she used for her time capsule. “I thought about using a website for this project, however my last website was difficult to make, very time consuming” (reflection #3). In other words, for her second project Ava chose Weebly over Google Sites based on the difficulty of using Google Sites in the past then went on to avoid a website builder entirely for her third project in favor of a PowerPoint presentation.

Anthony cited similar reasons for using PowerPoint: “I ended up making this PowerPoint instead because I realized that it was going to be much less work than the website was. I say this is the sense that I am not very talented when it comes to website design, and I thought that it would feel more comfortable to make a PowerPoint” (reflection #3). Reluctance to the idea of designing a website influenced Sierra as well.
Reflecting on the course in her portfolio, Sierra wrote: “I don’t consider myself tech-savvy at all so I thought the best way for me to create a multimodal project without stressing myself completely out, was to use PowerPoint and make a presentation” (portfolio).

Some students chose technology because they found it easy to use in the past. Josephine wrote: “I chose to use Wix as my website builder because I have used it before and it is quite simple to use” (reflection #2), while Ajay chose Google Sites “since I had a previous experience of using it in my previous class, it made my task easier” (reflection #2). Jessica also followed the trend: “I decided to use this website builder (Weebly) because I have used it in my previous English class, it is a very easy site to use to create your websites” (reflection #2). Luis looked to others to help him choose: “I used Weebly to create my website, because frankly that is what my friend used, so I figured it should be easy to create” (reflection #2).

**Responding to problems requires modifying your approach.** Students who ran into issues getting the technology to work the way they needed it to in order to complete their assignments sometimes changed their methods. The assignment prompt suggested writing a script to follow when recording the narration, but students didn’t necessarily take this advice from the beginning. Luis realized that he couldn’t edit his screencapture recording, but he tried to record unsuccessfully multiple times before modifying how he approached the assignment: “So by the fourth iteration I actually decided to write a script, so that I could stop messing up” (reflection #1).

Brandon described what he learned while trying to capture his live recording: “Making the audio and pictures go smoothly together was a real challenge. Each picture
must go along with what I am saying at all times. The narration and music must connect the audience with what they are looking at” (reflection #1). As a result of multiple attempts to record, he observed that “Timing and rehearsal are important steps to take when it comes to an audio video project (reflection #1). Ava also alluded to multiple attempts at recording before modifying her approach to achieve success: “I found it hard to time my sentences even with the script I wrote” (reflection #1). She overcame this when she realized that she “had to rehearse along the video a few times before recording” (reflection #1). These students lost time using trial-and-error before realizing they needed a systematic approach.

Sierra’s experience captures an extreme narrative of the trial and error approach taken by multiple students. She struggled with nearly every aspect of completing the narrated documentary, and her account of her struggles gives the impression of someone trapped in a maze of difficulty requiring hours of effort and inducing significant stress. After trying to download more than one screencapture program and creating additional problems for the operating system of her computer, she gave up on what she appeared to consider better options in favor of settling on one she had tried initially.

**Responding to problems requires accessing online help.** In addition to the trial-and-error approach, four students reported turning to online help when they were unable to solve their problems with technology. Although Kayla had significant difficulty with using a screencapture program (she tried three), she states that: “I fixed most of these issues by watching YouTube videos or googling it” (reflection #1). Kayla used online help for her time capsule as well: “I also had some trouble using Wix, so I researched and watched tutorials to better navigate through this web creator” (reflection #3). Adam also
used online help when working on his narrated documentary: “Luckily, Google was available for answer any questions about the process of making the presentation” (reflection #1). Kevin found online help useful: “The easiest part about using the computer is that most of the problems you face are fixable by going online and searching for solutions. This is what I did for my balancing issue” (reflection #1), although it should be noted that Kevin’s balancing issue wasn’t resolved in his final submission.

Seeking online help was Sierra’s last resort after a long series of trial and error efforts, “…finally [I] just googled free programs that would get the job done (reflection #1). Although online help was cited as important by these students, many more reported trying again and again to make a program work successfully, and some of them settled on a compromise when they saw no other choice.

Metatheme #3: “Success” Can Mean Compromise

Responding to problems requires accepting a result that’s not completely successful/that you aren’t happy with. Students reported struggling to move forward with their projects when they couldn’t solve their technological problems, which required them to make adjustments in their expectations for the program and modify their goals for their projects. After struggling to use first Jing, then QuickTime, then Screencast-O-Matic to record her narrated documentary, Kayla finally accepted that using any of the programs would result in a less successful project. For Kayla, Screencast-O-Matic “was easier to work with, however unlike Jing, it does not let you pause the recording so many of my failures were recorded in the final project” (reflection #1).

Sabrina completed a video documentary of her project but was unable to equalize the audio over all of the segments: “The parts of the video where the audio goes up and
down might be confusing but I did my best to level it out” (reflection #1). Josephine had trouble finding a screencapture program that she could operate successfully, so she finally went with the audio recording feature within PowerPoint: “This was the first time I used it and although I wasn’t entirely satisfied with it, it worked” (reflection #1). Kevin also struggled with recording issues: “One challenge I had was the audio was not cooperating with my voice and as a result, the balance between my voice and the music was off” (reflection #1).

Students also had to accept limitations on what they were able to accomplish within their ability to use a program. Pete was excited about his time capsule project and how it represented him as an athlete. As a starting player on one of the school’s sports teams, it’s likely that videos of Pete playing would have provided a vivid representation of his identity, but he ran into a problem he couldn’t solve: “I wanted to put a video in there off YouTube into my time capsule but it wouldn’t work so I had to use just photos” (reflection #3).

After hours of struggling with the technology for her first assignment, Sierra’s final result was less than satisfying: “I hated that for the free version of Jing it has their logo in the back of my entire slideshow presentation but I was so down with everything else it seemed like a minor issue. All I know at this point is that I know how to work Jing and I know how to upload it and submit it and that’s all that mattered to me at this point” (reflection #1). Her series of trial and error experiences resulted in her prioritizing getting the assignment turned in over completing the project the way she wanted.
Research Question #3

After identifying where and how students encountered problems with using the technology required to create and present their projects and how they respond to those problems, the final research question: In what ways do students describe working with technology to create multimodal projects and achieve their rhetorical goals? became the next structural code: **DESCRIPTIONS OF WORKING WITH TECHNOLOGY TO CREATE MULTIMODAL PROJECTS/ACHIEVE RHETORICAL GOALS** identifying where and how students described using technology and multiple modes to create their projects and achieve their rhetorical goals. Next, the data were themed for analysis, resulting in eight themes and two metathemes. The reflection questions students responded to that produced these data are:

- From the narrated documentary: Why is the medium (the video or sound project) the best choice for your audience and your purpose?
  - What rhetorical decisions impacted your choice of technology?

- From the rhetorical analysis: What website builder did you decide to use and why?
  - How did you design and format your website and why?
  - How does this design further your interpretation of the song you chose?

- From the time capsule: What specific rhetorical, material, methodological, and technological choices did you make in service of accomplishing the goals articulated above?
  - The results of this analysis are presented here, along with examples of how students are using technology to design with multiple modes (metatheme #1) and how they use technology and multiple modes to construct and persuade their audience (metatheme #2).
Metatheme #1: Using technology to design with multiple modes

Students creating their projects focused on design in a variety of interesting ways and for their own individual purposes. Projects in the class ranged from a virtual tour of Mexico to a multigenerational family of boxers to a modern-day guide to living by the Viking code. With free topic choice based on a general guideline of “identity” and a multimodal approach to composing, students engaged with their projects as a way to represent information important to them in the best ways possible. The first metatheme emerging from the coding is the students’ stated desire to demonstrate their content effectively.

Incorporate multiple modes/media to show rather than just tell. Jessica’s stated purpose for her time capsule was “to show people who I am,” explaining that “I chose this option because I thought I could make the power point very aesthetically pleasing and more relatable to the person I am with the background and images I chose” (reflection #3). She clearly saw that using multiple modes and digital technology gave her the opportunity to create a representation of herself that was appealing as well as convincing. James also worked to represent himself in his time capsule: “I used as many pictures of myself as I could. After all, my entire goal for this time capsule was to show people 5000 years from now what I am all about” (reflection #3).

Ava had a specific side of herself that she wanted to present in her time capsule: “This assignment to me is trying to show the future who I am in my personal life” (reflection #3). Her approach to showing this part of herself was to focus on items she uses to be comfortable, because “Comfort is a highly emotional and physical need, so I
picked the items I did to convey how important comfort is to me in my everyday life” (reflection #3). She chose to show comfort because she felt it would help her create a connection with her audience. Sabrina used multiple modes in her narrated documentary project to represent the opposite of comfort: “For my presentation I used two gifs that represent the judgmental faces representing the looks I have received from people who have tried to guess my ethnicity” (reflection #1). By using the gifs, she gave the viewer her perspective in a situation they may not have encountered before.

Some students represented themselves rather obliquely. For his time capsule Anthony “tried to use easy pictures that showed the devices by themselves first, and then a picture of the device in use so that it would be easier to understand” (reflection #3). His goal was to demonstrate items he uses every day as a way to capture who he is.

Throughout the class Jorge was focused on representing his country of origin in the best way he possibly could. For his narrated documentary he focused on his classmates as his audience: “At first if I would ask them if they would go to Mexico most of them would say NO, because they do not know what that is or because they do not know what fun things there is to do in Mexico. But after I show them the presentations with all the bright colors and all the cool pictures most of them will say yes to the question” (reflection #1). His emphasis was on changing the minds of his audience by showing them a side of Mexico they might not be familiar with.

Select background elements that represent theme. Another way students engaged meaningfully in design was through the various ways they represented theme in their projects. When creating a time capsule containing items from her room, Kayla “chose certain backgrounds that I felt created a homey feel” (reflection #1). Sabrina
created a website for her rhetorical analysis of a song by the band Badfinger. She wanted her viewer to experience the song in what she saw as its original context: “My theme for the website was the 1970’s era of the last century, so I made sure I had used the classic 70s wallpaper backgrounds as well as the classic brown, red and yellow color schemes” (reflection #2). Continuing this approach, Jorge used thematic elements to represent the importance of the artist he was analyzing: “I tried to do my website with colors that Vicente Fernandez commonly uses in his dressing. He usually uses gold, brown, white, and brown which where the colores that I used in my website” (reflection #2).

Pete used design to convey how he responded to the song he chose for his rhetorical analysis: “I wanted to have a real colorful website because the song I chose was an upbeat song so I felt like different colors would help show this” (reflection #2). James was also trying to represent something important about his analysis by using design: “When I was putting together my site, I chose a lot of dark colors in the background. I feel like it fit the “mean” vibe that the song gives off” (reflection #2).

Sierra followed a similar approach to the use of color to convey information: “The design I used was a very simple design using soft and “clean” feeling colors, white and yellow. I chose these colors because they match the color theme of the album cover “Band New Eyes” and because since the song I chose had a very soft melody to it, I thought this was appropriate and fitted it best” (reflection #2).

Jessica’s approach to representation was even more interpretative than some of her classmates: “When I started to design my website, I used black and white pictures of a pretty city view, I did this because when I listen to this song I think of pretty city views and a have a calm feeling of relaxation. My choices made sense with how the song made
me feel when I listened to each lyric” (reflection #2). Her goal was to present specific images conveying the emotions her song invoked in her imagination. Ajay was focused on the best way to use his background to shape the experience of his time capsule audience: “I wanted my background to be the same through the entire capsule as I wanted my audience to stick through the same mood and atmosphere I have created at the beginning of my capsule, and I chose green as my background because I am making my audience understand intensified topics through a simple explanation” (reflection #3).

Students chose a variety of highly personal and specific ways to design, both to demonstrate something important about their content and to be creative.

Express yourself creatively. Sabrina embraced each opportunity to design her projects creatively: “I was able to tap into my creativity when I put the website together, and I am positive I might have had too much fun designing it” (reflection #2). Although I’m not sure every student would show the same level of enthusiasm about the process of creating their projects, most students expressed appreciation for the opportunity to design along with awareness of deliberate choice in incorporating important values of their own into the projects they created.

In addition to representing their specific content, some students expressed themselves in the way they put their projects together. Pete accessed his personal preferences to impose order on the world of his rhetorical analysis: “My website is well laid out because I like things to look neat, I know some people call this boring but I like it. Also, my website is easy to navigate around” (reflection #2). Michael had a similar approach to presenting his analysis within the context of his personal preferences: “I wanted to create a website that was simplistic because that’s my type of style when it
comes to creating projects with designs and visuals” (reflection #2). Michael influenced multiple students with the creative design of his class presentation. Xavier also liked a minimal look, and formatted his assignment based on an impromptu tutorial from Michael: “I used a newly discovered tool in PowerPoint to make the pictures that I chose to use by using the tool that Michael showed us in class, as it makes the pictures appear much cleaner overall as it eliminates the background of the picture, but not the picture itself” (reflection #3).

Josephine was so creatively inspired by the “More than a Feeling” by Boston that she connected every design aspect of her rhetorical analysis website to the album the song was released on, but she didn’t stop at color scheme: “I decided to choose a different background for every category that would suit it best. I chose stars for the home page because it fit with the spaceship theme from the Boston album cover. For the band members page, I chose a silhouette of a band, and for the lyrics page I chose a picture of a girl fading just the way Marianne does in the song” (reflection #2). Although the rhetorical analysis assignment featured a song, students were instructed to choose a song they felt connected with their identity in some way, and they demonstrated a variety of creative ways to weave themselves into this academic assignment.

**Metatheme #2: Use technology and multiple modes to construct/persuade the audience**

Throughout the students’ project reflections there are constant references to audience. The following themes demonstrate different aspects of how students both constructed their audience and worked to persuade them using digital technology and multiple modes. Students addressed their audience by using modes symbolically, by
incorporating aspects of their physical selves in their projects, using multiple modes to reinforce a message they were trying to convey, and by creating design structures for the express purpose of capturing and directing the attention of their audience.

**Use multiple modes symbolically.** Students were attuned to symbolism and capturing it using images. For the rhetorical analysis website Josephine shared her interpretation of one of the lyrics using symbolism: “…for the lyrics page I chose a picture of a girl fading just the way Marianne does in the song” (reflection #2). Ajay also chose a symbolic image based on his interpretation of the song: “I have decided to put in pictures about what I was talking through each stage, for example in the picture of the cat you could clearly see the emotion through its eyes and I feel that was a great example of pathos, so that it would make my audience know about the aspects of the song” (reflection #2).

Some students shaped virtual spaces symbolically. Kayla created a time capsule that was a simulacrum of her bedroom. Her goal was to position the audience as viewers of her life, but also to symbolize her personality as an introvert who functions best when she enjoys solitude: “The first page is a background of a building with windows to symbolize ‘the outside looking in’” (reflection #3). Emily also represented an aspect of her life in her time capsule, in this case her childhood: “The specific technological choice I made was to make a website with bright colors to represent my past when I was young” (reflection #3).

Ava used the organizational structure of PowerPoint, creating a virtual time capsule to symbolize an actual time capsule: “A powerpoint to me is more closed. It gave me a feel that though it’s digital it’s more of a capsule than a website is because it
encapsulates my items in a single document that can be opened later” (reflection #3). Xavier chose items for his time capsule that represented him through the seven virtues, but rather than just present the items, he arranged his time capsule as a symbolic experience for the viewer “… I intended to shape my PowerPoint as a sort of tour through my capsule” (reflection #3). Anthony also thought of his narrated documentary project as a space, but he used that space symbolically in ways that were different from Ava and Xavier: “The layout of my presentation is set up in a strange kind of way, with different things all over each slide. I did this on purpose because I felt that it sort of represented that fact that these things all jumble together to make me” (reflection #1).

Adam had a concept of his time capsule design that communicated a complex symbolism: “Once the viewer is past the introductory and manifest page, they could explore and learn about the different items. I did not give the viewer the opportunity to go back to the introductory and manifest pages. This choice was deliberate in order to symbolize the progression through time and the fact that we cannot go backwards in time” (reflection #3). Adam captured his audience in a virtual arrow of time, conveying a complex understanding of the concepts associated with a time capsule; however, he also created a representation of an individual’s momentary life: “The items pages are different, however, because those items represent my life in the present time. I can go back and forth between items and so should the future generations in order to get a feeling of how I live” (reflection #3).

Incorporate physical presence. In addition to representing ideas and aspects of themselves or their topic symbolically, students also sought to persuade their audience by capturing their physical presence within their projects. Ravi used his voice to help convey
his message and overcome audience confusion in his narrated documentary: “Using audio to present my identity to my audience has really turned helpful. Slides may not be self-explanatory so I have tried my best with feeling to capture their attention and give them all the information they got to know about me” (reflection #1).

Representing his background as an Englishman from the Black Country, Pete included his voice so his American audience could hear him speak as part of his content: “…so you could hear someone speak from the black country and understand how different it is to the Queens English” (reflection #1). Josephine had a similar goal in recording her narrated documentary project: “I knew that since it is a very personal element of my identity, using my own voice to speak about my life would be the most effective method of conveying my message” (reflection #1). Kevin even tried to make his voice recording compelling by imagining a very specific audience: “…when I rehearsed the audio, I imagined me talking to one of my friends” (reflection #1). Ajay used his voice to ensure that his audience was able to understand the images he chose for his narrated documentary: “I chose to present my project with my audio, and I think I was able to present it in a better way than writing the entire essay as I could clearly go over the various parts that I wanted my audience to understand about Hinduism and explain them clearly about what the pictures were” (reflection #1).

Ava not only included a video of herself along with an audio over-dub, she went so far as to incorporate her hand and arm drawing the images she chose to represent her topic. “One rhetorical decision that impacted my technology use was the authenticity of hand drawn images. I was going to screencast the whole video using paint on my laptop to draw. But I really didn’t like how crude my drawings looked in pixels” (reflection #1).
This choice enhanced her “Draw My Life” video concept by creating a digital representation of a physical person.

**Make ideas accessible/reinforce message.** Students were aware of the power of digital technology and multiple modes in conveying complex ideas and information. Kayla understood that she would need to reinforce her message to reach her audience: “The screen recording was the best option for my given audience because it allowed me to use pictures, videos sound and narration as tools to show an audience uneducated about my cultural identity group about its characteristics and my place within it” (reflection #1). In this way Kayla was able to create and convey a constellation effect representing not just her identity, but the characteristics of her cultural group.

Pete wanted his audience to understand how people in the Black Country have historically led very hard lives of manual labor: “An example of this would be the photo of the guy’s hands and how they were all cut and wrapped up in a bandage, obviously, it’s not as bad now but there are still a lot of people who do manual labour like chain working etc... who still have rough hands like that. I felt that would be the best way to explain the history because its more visual so you can get a sense of it and then me speaking over it so you get a bigger and better picture of why I chose that photo to represent my history” (reflection #1). Pete references his Black Country speech as evidence of his connection to the hard-working lives of his ancestors and family members, and he goes on to demonstrate that connection by representing the hard work he put in to become a member of the university soccer team.

Some students linked multiple modes in order to affect their audience physically. Jessica wanted to connect to the audience by sharing her feelings about the song she
analyzed for her rhetorical analysis: “My goal was to hopefully make anyone who listens to the song feel the way I feel when I hear “Life’s for The Living”. I wanted to show people what the lyrics really mean, so they can feel like the song is talking to them or is about their life” (reflection #2). She used digital technology to embody her response to the song. Brandon had similar goals for his rhetorical analysis: “My website is trying to get people to see things through the bands eyes. System of a Down is very aware of their surroundings and make conscious efforts to try and deal with the problems they see around them” (reflection #2). Brandon wanted to convey to his audience how the song represented the ethos of the band, and he did this by creating a multimodal experience for the viewer that placed them within the perspective he inhabits when he listens to the song.

Some students used their resources practically. Ava chose a Spanish-language song, so she worked to maintain the connection with a non-Spanish speaking audience: “Along with this introduction to the song, the page includes the video/song posted from youtube, and the lyrics in both English and Spanish. I made sure to include as many sources as I could to help those in the audience who don't speak Spanish understand and connect with the song as much as I do” (reflection #2). Throughout the class Ajay contrasted his multimodal projects with essay writing: “I knew that a block of text wasn’t the best way to teach as Hinduism is a very visual religion. By taking the perspective of someone who doesn’t know anything about the religion, I picked out various pictures and audio that best represented Hinduism and my own identity” (reflection #1). He created and narrated a visual and audio presentation to immerse his audience not only in his individual perspective, but in the larger cultural and religious context he came from.
Control directional flow of information/direct audience attention. Students expressed the desire to interact with their audience by shaping their experience in ways that directed their attention. These efforts included Emily’s concern for how to help the audience for her time capsule follow her message: “In the website I wanted to it to be easy to navigate through so those who read it 5000 years from now do not have a difficult time” (reflection #3), to Brandon capturing the audience’s attention with multiple modes: “I chose to put ancient sounding music in the background of my project. This music along with the pictures and my narration can really demand your focus” (reflection #1).

James structured the website presenting his rhetorical analysis to connect the audience directly with his interpretation of the song: “What I did was put the lyrics on one side of the page in white lettering, and put little annotations on the other side, in yellow text. What this did is guide the reader along with the song, explaining what the lyrics meant as they progressed through their reading of the lyrics” (reflection #1). Anthony also wanted to catch and keep the attention of his audience: “Being in an age where distractions come quite often, having a presentation that is entertaining will keep people interested in it instead of something else. This impacted my choice of medium by changing how each slide was laid out, what images I would use, and what music I would have playing in the background” (reflection #1).

Of all the students Adam took control of his audience’s attention to the highest degree. In addition to his time capsule design that controlled where his audience was able to go, he also created a unidirectional pathway through his song analysis website: “I designed the website to have a rabbit-hole effect built in. Once the viewer had finished with the page, there is a button provided that is linked to the next page, but there is not a
button for them to go back” (reflection #2). Adam wanted the audience to be compelled, but he also wanted them to experience the inexorable descent into depression that Lana Del Rey represented in her album *Honeymoon*.

**Make a project entertaining, interesting, and enjoyable for audience.** The students’ consideration of their audience went beyond efforts to communicate with them to creating projects students felt would be entertaining, but they also expressed an awareness of how entertainment can be a useful tool for someone conveying a message. Anthony considered his audience specifically: “I wanted this presentation to be easy to understand and enjoyable for people to watch and listen to” but that consideration also had a rhetorical purpose: “Being in an age where distractions come quite often, having a presentation that is entertaining will keep people interested in it instead of something else” (reflection #1).

Brandon wanted to transport his audience: Using audio and video immerses the audience in the project. Also, the music brings you back to that simpler time. The music reminds me of a time when people of a village would gather around and drink mead and celebrate their victories” (reflection #1). This imagery was specifically tied to his message of applying principles from the Viking life to his modern context. Xavier also created an entertaining website to emphasize the personal power of Kendrick Lamar: “I designed my web site using a lot of pictures, especially of Lamar, simply to remind everyone of the mind behind the magic of these two songs, and I also included pictures of his album covers as well” (reflection #2).

Finally, Josephine summarized her efforts to communicate her purpose effectively when she constructed the website for her rhetorical analysis: “I chose to begin by giving a
brief overview about Boston and a fun fact about their album cover just to appeal to the audience, to interest them. I used words, pictures, videos, audio and hyperlinks to create an enjoyable and knowledgeable project that was easy to navigate” (reflection #2).

The previous three sections presented the results of my coding and analysis of the data. The results of analyzing the data inform my research questions with fine-grained and textured responses from student participants reflecting on using digital technology to complete multimodal projects. The next section is a discussion of the significant findings within these results.

**Discussion of Results**

This study set out to investigate two claims: that students are self-teaching users of technology (Brandt, 2001; Bump, 2013; Yancey, 2009) and that personally relevant goals motivate students working with digital technology (ALA, 2013). The research questions guiding this study explore how students characterize the technological problems they encounter, how they respond to those problems, and how they describe using digital technology to complete multimodal compositions and practice rhetoric as it is taught in first-year composition classes. By analyzing data from the project reflections of students using digital technology to produce multimodal projects focused on aspects of their identity, my hope was to gain a deeper understanding of what students do outside of class when working on these types of projects so that approaches to teaching digital multimodal composition can be improved. Based on the analysis results presented in the previous section, the significant findings of this study are presented and discussed below.

**Characterizing Technical Problems**

**Finding #1: Lack of familiarity with the type of program (i.e. screencasting) caused the most widespread difficulties with using technology.**
“At first, I did have a problem with my technology. I did not understand how to use a screen casting program” (Michael, reflection #1).

The results indicate that the type of technology chosen by the instructor for multimodal projects can have an effect on student experience. Although issues with using PowerPoint or a website builder were fairly infrequent and easily solved, participants reported struggling to complete their projects using the technology required for the narrated documentary because the assignment required the use of a screencasting program, and screencasting was beyond the scope of experience for virtually the entire class. SWA #2 was a “test run” of a screencasting program meant to prepare students to use screencapture for their documentary project (video or audio) on an important aspect of their identity. The screencapture programs suggested for the SWA #2 assignment were Jing, Screencast-O-Matic, or another program chosen by the student (each of which caused problems), and at the completion of SWA #2, students were so frustrated with screencasting that when the class voted to include a screencasting option for the narrated documentary (because of a general resistance to using a video creator), they also added the option of completing a PowerPoint presentation with a narration recorded on each slide.

The primary reason students struggled with screencasting appears to be because this type of program produces a dynamic rather than a static product, meaning that the type of composition was unfamiliar as well. SWA #2 was in essence a recorded multimodal presentation featuring narration. The main difficulty seemed to be the need to create a simultaneous presentation. In other words, students had to stage or produce their project as they were recording it. Students were generally more familiar with using PowerPoint or a website builder, both of which produce a static product, even if that
product includes recorded elements, than they were producing a screencapture recording of a PowerPoint presentation featuring their narration. Students had to figure out how to coordinate multiple modes on screen and narrate while recording in real time.

This production-based approach was hard for many students. For Brandon “Making the audio and pictures go smoothly together was a real challenge. Each picture must go along with what I am saying at all times. The narration and music must connect the audience with what they are looking at” (reflection #1). For Adam “It was also a challenge to add videos and music to the presentation while at the same time providing narration” (reflection #1), and for Kayla: “The most challenging part was figuring out how to use the technology in a way that helped reach my audience and managing so much at once” (reflection #1). Due to their lack of familiarity with screencasting, students had to stop and start their projects repeatedly while trying to meet the assignment requirements.

Finding #2: Problems with unfamiliar screencasting technology were exacerbated by the assignment requirements.

“...you could not record longer than five minutes, which I found to be extremely difficult to record at exactly 5 minutes” (Xavier, reflection #1).

The difficulties students experienced with the narrated documentary reveal an important finding: some of the problems students faced were actually caused by trying to meet the assignment requirements using the required technology, particularly when that technology was unfamiliar. In addition to learning a new type of technology and composing method, students experienced difficulty with the narrated documentary prompt because of a conflict between the assignment requirements and the capabilities of the technology. For the narrated documentary, students needed to create a screen
recording that was between five and seven minutes long, and the suggested programs, Jing and Screencast-O-Matic were both problematic, Jing because the top range of recording time was five minutes and Screencast-O-Matic because the recording can’t be paused or edited.

Kayla experienced a string of barriers: “…Jing only allows you to record five minutes. I then tried using QuickTime but I found that it was more difficult to use with PowerPoint. Finally, I downloaded Screencast-o-Matic. It was easier to work with, however unlike Jing, it does not let you pause the recording…” (reflection #1). Luis expressed irritation because “I couldn’t go back and fix my mistakes” (reflection #1), and for James “The biggest challenge I faced was the fact that I could not edit” (reflection #1). The time limit and lack of editing capacity meant that students started and restarted their staged productions in efforts to complete a “perfect” narration that didn’t require editing in Screencast-O-Matic or to arrange their content effectively enough that they could stay within the 5-minute time limit in Jing.

These limitations also appeared to be exacerbated because students were creating personally relevant content that they were highly motivated to explore and present successfully. They may have been driven to prioritize expressing their content fully over creating a shorter or simpler presentation because their topics were personally relevant. In other words, some of the problems students characterized were actually caused by the assignment, both because of program limitations and because, despite their technical difficulties, students appeared to be highly invested in doing well.

Finding #3: Problems with unfamiliar technology were the most time consuming and frustrating and were sometimes intractable.
“I recorded my entire presentation on this program, only to find that although the audio recorded all the way through, only my title slide was recorded from my screen! I tried several times and wasn’t able to make it work” (Anthony, reflection #1).

The experiences of participants indicate that the type of technology chosen for a multimodal project had an impact on how they spent their time while working on their projects. Students were largely able to solve their issues with PowerPoint and/or a website builder, but many hit impasses with screencapture programs that were time consuming, frustrating, and sometimes insolvable. These experiences reveal something about the nature of the Duffy et al. technological impasse: overcoming the impasse comes at a cost to the user, and this cost can be high when students face a deadline that forces them to sacrifice some aspect of their time, attention, or project content.

Students described working within these constraints in ways that indicate difficulty. James stated that “I did have a hard time using that screen capture program” (reflection #1). Kayla and Xavier both found issues with screencasting “frustrating” (reflection #1), Luis found them “irritating” (reflection #1), and Sierra found that they required her to be “relentless” (Sierra, reflection #1). Kayla “…didn’t face too many challenges until the end” but she also “faced a lot of challenges using this new technology” and “kept running out of time” (reflection #1). After switching to Jing, Ravi found that Screencast-O-Matic “…was hard as you go on you may make mistake and if you were to correct it, you must repeat it again” (reflection #1), and although Ava chose to create a video, that technology was new for her as well and presented a series of difficulties: “I ran into small issues that turned into big problems I didn’t know I’d have when I chose to do something like this” (reflection #1).
Of all the students it was Sierra who reported the most difficulty, describing her struggle to complete the narrated documentary as programs that “kept failing to download” and programs that she “tried to download about 5 or 6 different times and every time it was almost downloaded on my computer, my computer would notify me that I was about to download several different viruses” (reflection #1). She encountered programs requiring her to register that then failed to work, leaving her frustrated after a long series of trials: “I was completely lost and confused on what was going on” (reflection #1).

If students are cornered into a specific and unfamiliar technology type or program without the ability to choose something familiar, they spend time outside of class trying to figure out how to use the technology to complete the assignment, but the project reflections show that when the technology requirements were more familiar and when students were given a choice of the type of technology they wanted to use, they devoted less of their time grappling with technical difficulties and focused more on working with their content.

**Responding to Technical Problems**

**Finding #4: Students responded to technical problems with trial-and-error.**

“At first I wasn’t able to record the music playing off of my computer, so I had to find a different program... The second program that I used recorded my voice and the music perfectly though! Unfortunately, the problems with this program were much worse.” (Anthony, reflection #1).

Based on the results of this study, the term “self-teaching” does apply to students using technology, but relying on students to be self-teaching users of technology may obscure how their time out-of-class spent using technology to try and complete their
projects contributes to their overall experience. In all of the reflections focused on solving technical problems, only four students reported seeking help online for problems. Rather than follow the task model of diagnosing the problem and acquiring the knowledge needed to resolve it as described by Duffy et al. (1992) and promoted for composition instructors by Selber (2004), students appear to be focused primarily on completing their projects and experience technological impasses as distractions from their goals.

Balancing the desire to fulfill their personally relevant goals with technological problems, students don’t appear to dive into problem solving efforts aimed at understanding how the technology works, rather they experience using unfamiliar technology as a series of trial-and-error efforts. This type of self-teaching is costly. For students, trial-and-error can be time consuming since they lack a clear picture of what they are trying to achieve. Duffy et al. believe technology users overcome impasses by curing their lack of knowledge, but trial and error is an ad hoc, contingency based method that may not contribute to a student’s overall knowledge or help them in the future. Without a clear picture of what they are trying to get the program to do they are following what Jason Frand (2000) refers to as the Nintendo method of problem solving: “The key to winning in Nintendo is constant, persistent trial-and-error to discover the hidden doors” (p. 17). The fact that the “doors” in the technology are hidden may be problematic in terms of the educational goals of FYC classes.

This constant, persistent trial-and-errors limits students, costing time, attention and resulting in repeated efforts that follow a pattern: trying a technology>failure to make it work as expected>abandonment of the technology>trying another technology, sometimes because the programs they were using were incompatible: “I then tried using
quicktime but I found that it was more difficult to use with PowerPoint” (Kayla, reflection #1). Much of Xavier’s time for SWA #2 and the narrated documentary was spent struggling with screencasting: “I think, overall, I had to record my first video for SWA 2 about 20 times before I got it right, and it didn’t even play either, and I believe I had to record my final video about 25-30 times before I finally got it right, and it was frustrating to say the least…” (reflection #1). In other words, students spent more time determining that they couldn’t make a program work rather than learning how to make the program work.

Even when students chose their own screencapture technology, they faced the final barrier of uploading their project to the LMS, likely right before the project was due. Multiple students discovered that Learn would not accept projects saved with the .mov file extension. Jorge overcame it by circumventing the regular submission process and emailing the file directly while others uploaded their files to YouTube, but Sierra wasn’t familiar with these solutions, and she had to go back and find yet another way to complete her assignment: “I first started off with Windows Movie Maker and it was a lot easier to work with than Jing but in the end when I had to upload it and submit my final project it did not deliver and I had to go back to the drawing boards i.e. finding a new way to record and narrate my power point” (reflection #1).

When assigning digital multimodal composition projects, it is important to consider how self-teaching students may be spending their time. If we want to promote investment in projects through personally relevant topics, we need to include consideration of how students’ out-of-class time is being spent, because repeated and
frustrating trial-and-error attempts may have an effect on the final assignments students submit.

**Finding #5: Students may negotiate their project goals based on the difficulty of the technical problems they encounter.**

“I wanted to put a video in there off YouTube into my time capsule, but it wouldn’t work so I had to use just photos” (Pete, reflection #3).

Although there is evidence of commitment to representing their topics well, the time and energy students spend figuring out the technology may mean that students have to modify their goals for their project. Some participants in the study showed awareness of how the difficulty level of a technology had the potential to impact their assignment decisions. After holding the class vote to include the PowerPoint options for students, Michael expressed gratitude in his reflection: “At first, you were expecting us to do a movie on iMovie or Windows Movie Maker, but I’m glad you simplified the project because it made this project a whole lot easier for me and the other classmates” (reflection #1).

When students hit a technological impasse and switch to trial-and-error mode, they lose time and their window of opportunity starts to close. If they are hung up long enough, they may have to adjust their project goals in order to meet the assignment due date. Out of this mix comes their final project, which is a negotiation between their goals and what is possible given the technology. Sometimes these negotiations occurred before the students started their projects. For the website presentation of a rhetorical analysis, students frequently described choosing websites and other programs they were familiar with or reported avoiding programs they knew would be harder to use.
Ravi chose Weebly: “…because last time I had worked with Google Site, I did not like much about it…” (reflection #2), while Sierra wrote: “I don’t consider myself tech-savvy at all so I thought the best way for me to create a multimodal project without stressing myself completely out, was to use PowerPoint and make a presentation” (portfolio). Luis looked to others to help him choose: “I used Weebly to create my website, because frankly that is what my friend used, so I figured it should be easy to create” (reflection #2). For the time capsule most students chose to create a PowerPoint, Ava because “my last website was difficult to make, very time consuming” (reflection #3) and Anthony “because I realized that it was going to be much less work than the website was” (reflection #3).

It is possible that limiting themselves to website builders that they considered easy to use or creating PowerPoint presentations to avoid building a website altogether curtailed the possibilities for students’ projects, but students indicated having had experience with technology that taught them some of the perils of encountering technology as a barrier between the user and the completed project.

Finding #6: Students who encountered difficulties they could not solve sometimes accepted less than successful project results.

“I hated that the free version of Jing has their logo in the back of my entire slideshow presentation, but I was so down with everything else it seemed like a minor issue” (Sierra, reflection #1).

Results indicate that when students are unable to fix problems with their projects, they will submit work exhibiting issues and that they aren’t satisfied with. Sometimes after completing a project, students either could not fix certain issues or ran out of time before they could complete the project to their satisfaction. These issues were particularly true for projects requiring the screencasting programs or other recording technology
because of the lack of editing capabilities and because students exhausted their attempts to create a recording they were completely satisfied with.

Sabrina completed a video documentary of her project but was unable to equalize the audio over all of the segments: “The parts of the video where the audio goes up and down might be confusing but I did my best to level it out” (reflection #1). Kevin also had audio difficulties he could not overcome: “One challenge I had was the audio was not cooperating with my voice and as a result, the balance between my voice and the music was off” (reflection #1). Kayla finally accepted that using any of the programs would result in a less than successful project. Although finally completing her narrated documentary project using Screencast-O-Matic, “…it does not let you pause the recording so many of my failures were recorded in the final project” (reflection #1).

Xavier struggled with his microphone: “I had to adjust my voice level, and distance from the microphone due to the fact that it would sometimes not pick up my voice and I had to completely re-record the video” (reflection #1), and even when he was able to capture a usable audio recording he couldn’t upload the project to Learn: “So I don’t know what keeps happening to my audio when I export the project to YouTube but it’s very low volume. In iMovie it’s loud and you can hear me perfectly but it’s like YouTube destroys it. Anyways, I hope you can hear or if you can’t, headphones worked for me” (reflection #1).

Students working to complete multimodal projects using digital technology must attempt to balance the assignment requirements with the need to use technology, and when that technology is unfamiliar or difficult to use, students may lose a considerable amount of time trying to solve technological impasses. This loss of time and ultimate
compromise of their projects can be frustrating for students, particularly when their topics are personally relevant and even when they enjoy certain aspects of digital composing but are unable to resolve the technical problems.

**Using Technology to Create Multimodal Projects/Pursue Rhetorical Goals**

**Finding #7: Students used digital technology and multiple modes to design.**

“...the visually striking appearance of the Vikings influenced me to choose stunning pictures and music that brings you back to ancient times. The music reminds me of a time when people of a village would gather around and drink mead and celebrate their victories” (Brandon, reflection #3).

Analysis of the data relating to students’ use of technology to create multimodal projects and pursue rhetorical goals reveals that students do find personally relevant topics exciting and motivating as claimed by Becker (2018) and that students do function as designers as described by the New London Group (Bezemer & Kress, 2008; Cope & Kalantzis, 2000; Kress, 2003). Participants in the study appeared to be invested in representing their topics, both because they had personally relevant goals and because they enjoyed design. Many students exhibited awareness of the design possibilities of digital technology and reported making efforts to express themselves to their audience in ways that were reinforced over multiple modes throughout their projects.

Students evidenced a great deal of thought that went into the design of their websites for a rhetorical analysis of a song. James created a website to present his analysis that was representative of the style aesthetic of the 80s hip hop group N.W.A.: “When I was putting together my site, I chose a lot of dark colors in the background. I feel like it fit the “mean” vibe that the song gives off. It also just fits the style of Ice Cube. He wears a lot of black clothes with white logos or writing, as many of the NWA
members did” (reflection #2). Jessica wanted to represent her emotional response to the song she analyzed by using images symbolically: “When I started to design my website, I used black and white pictures of pretty city view, I did this because when I listen to this song I think of pretty city views and a have a calm feeling of relaxation” (reflection #2).

In addition to displaying a sensitivity to the relationships between color and emotion, students worked to represent complex ideas using symbolic elements. Josephine used her website to represent how magical she found the song “More Than a Feeling” by Boston: “I decided to choose a different background for every category that would suit it best. I chose stars for the home page because it fit with the spaceship theme from the Boston album cover. For the band members page, I chose a silhouette of a band, and for the lyrics page I chose a picture of a girl fading just the way Marianne does in the song” (reflection #2).

For his rhetorical analysis Adam created a rabbit hole design that drew the viewer into his presentation, and he used that effect in his time capsule assignment to symbolize the nature of time and reflect his identity:

“Once the viewer is past the introductory and manifest page, they could explore and learn about the different items. I did not give the viewer the opportunity to go back to the introductory and manifest pages. This choice was deliberate in order to symbolize the progression through time and the fact that we cannot go backwards in time. The items pages are different, however, because those items represent my life in the present time. I can go back and forth between items and so should the future generations in order to get a feeling of how I live” (reflection #3).
The connection between design, topic, and composer took a variety of compelling forms, and students were able to reflect and report on how and why they made the choices they did in their projects.

**Finding #8: Students were motivated to express personally relevant topics well.**

“My goals, or intentions, for this project were to show exactly who I was and what difficulties I had to overcome in my childhood” (Michael, reflection #1).

The great variety of design approaches students employed across their projects also represented their practice of the rhetorical situation, particularly in terms of purpose and audience. A course focused on identity with free topic choice resulted in students being invested in their projects to a high degree, and that investment seemed to help clarify their purpose. Students considered many aspects of their presentations and worked to optimize the communicative effect of each element with an emphasis on communicating effectively and being understood.

Multiple students evidenced awareness of the power of including their presence in their compositions. Some represented themselves visually: “I used as many pictures of myself as I could. After all, my entire goal for this time capsule was to show people 5000 years from now what I am all about” (James, reflection #3), and others through recordings of their voice. Although she wasn’t completely happy with her recorded narration, Josephine understood the importance of presence in communication: “I knew that since it is a very personal element of my identity, using my own voice to speak about my life would be the most effective method of conveying my message” (reflection #1). Ravi also recognized the opportunity to enhance the effect of his presentation using his voice: “Using audio to present my identity to my audience has really turned helpful.
Slides may not be self-explanatory so I have tried my best with feeling to capture their attention and give them all the information they got to know about me” (reflection #1).

Anthony embedded a symbolic representation of his identity into his presentation design for his narrated documentary: “The layout of my presentation is set up in a strange kind of way, with different things all over each slide. I did this on purpose because I felt that it sort of represented that fact that these things all jumble together to make me” (reflection #1). Awareness of representative design possibilities and sensitivity to powerful aspects of communication occurred across virtually all student projects.

Jorge chose to represent his Mexican identity and overcome any resistance an American audience might have to visiting his beloved Mexico: “At first if I would ask them if they would go to Mexico most of them would say NO, Because they do not know what that is or because they do not know what fun things there is to do in Mexico. But after I show them the presentations with all the bright colors and all the cool pictures most of them will say yes to the question” (reflection #1). Pete also worked to represent his home in the Black Country in England, considering how multiple modes could be used to great effect: “I chose to do a video and speak over it, so I can show photos and explain a little bit about the photo. An example of this would be the photo of the guy’s hands and how they were all cut and wrapped up in a bandage, obviously, it’s not as bad now but there are still a lot of people who do manual labour like chain working etc... who still have rough hands like that” (reflection #1). Pete started out thinking he was representing a history he was connected to mainly through his accent, but over the course of the semester he recognized that his dedication to soccer and success as a player are directly linked to his hard-working family background.
Students evidence a deep commitment to their personally relevant content, and they showed dedication to communicating their topics as effectively as possible using the tools available to them, including the rhetorical concepts taught in the class, particularly audience.

**Finding #9: Students considered audience to a high degree.**

“I wanted my background to be the same through the entire capsule as I wanted my audience to stick through the same mood and atmosphere I have created at the beginning of my capsule, and I choose green as my background because I am making my audience understand intensified topics through a simple explanation” (Ajay, reflection #2).

It is apparent at the conclusion of this study that working on digital multimodal projects emphasizes aspects of the rhetorical situation in ways that are powerful for student motivation and learning. Throughout their reflections, students described their audience, what that audience needed, the best way to communicate with them, and how best to be understood as individuals by an audience they were keen to persuade.

Ajay represented Hinduism in his narrated documentary project, and he worked consciously to overcome any confusion his audience may have when confronted with complex images and sound: “After deciding my topic for the assignment, my only goal for this assignment was to make sure that my audience understand what Hinduism is all about with my clear audio and striking pictures” (reflection #1). He carried the desire to persuade an audience into his rhetorical analysis website: “I have decided to put pictures about what I was talking through each stage, for example in the picture of the cat you could clearly see the emotion through its eyes and I feel that was a great example of pathos, so that it would make my audience know about the aspects of the song” (reflection #2).
Ava constructed an audience that was varied, and she was thoughtful about what they would need in order to appreciate her chosen song: “Along with this introduction to the song, the page includes the video/song posted from youtube, and the lyrics in both English and Spanish. I made sure to include as many sources as I could to help those in the audience who don't speak Spanish understand and connect with the song as much as I do” (reflection #2).

Finally, Brandon chose a song that represented the grief he experienced when his father committed suicide. His strategy was to use multiple modes to present his analysis of “Lonely Day” by System of a Down so that he could have the greatest influence over the emotional state of the viewer and share a philosophical perspective that he found valuable as a teenager: “My website is trying to get people to see things through the bands eyes. System of a Down is very aware of their surroundings and make conscious efforts to try and deal with the problems they see around them” (reflection #2).

These examples demonstrate the main findings resulting from my analysis of the data. The research questions aimed at exploring how students understand and characterize the problems they encounter with technology and how they respond to those problems have helped uncover trends in the data related to students’ out-of-class experiences with using digital technology for multimodal projects. I found that students struggled the most with the screen capture technology that was unfamiliar and that produced a recorded text. Students specifically struggled with staging a multimodal presentation in real time while delivering and recording a narration.

The coordination demands of this type of composing were unfamiliar to students, and this lack of familiarity was made even more challenging by assignment requirements.
that prompted students to create too much content to capture effectively given the limitations of the screencapture programs. The combination of these factors required a significant amount of time spent trying to understand a new technology while reconciling the demands of the assignment, and the intractable nature of the problems students encountered were frustrating.

It is also clear that students are experiencing the double learning curve as described by Becker (2018). They attempt to use the technology to create their projects, but lack of familiarity or conflicting demands can throw the user onto the second curve, where they must overcome the Duffy et al. (1992) technological impasse before returning their attention to the content of their projects.

Contrary to the Duffy et al. task model, which describes a process of diagnosis of the problem/acquisition of the knowledge needed to overcome the impasse, students responded to these technical problems by engaging in a series of trial-and-error efforts that generally led to them spending time and energy determining that they couldn’t make a program work rather than learning how to make the program work. This finding doesn’t contradict claims that students are self-teaching users of technology, but it does help illuminate what that term means practically. Students encountering technical difficulties sometimes found it necessary to negotiate their project goals based on both the technical difficulties they encountered and the loss of time resulting from those difficulties. In addition to modifying their goals, some students eventually submitted projects that weren’t fully successful or satisfying to the creators.

Finally, students were clearly and systematically motivated by personally relevant goals, but since the data occurred across multiple projects and reflections, and lacking a
specific enough question to probe that connection, I was unable to establish a link between that motivation and students’ willingness to overcome technical difficulties. What I did establish is that using digital technology to create multimodal projects representative of personally relevant topics results in students practicing rhetoric as it is taught in first-year composition to a high degree of self-awareness and effectiveness. The next chapter presents some of the implications of these findings along with the limitations of this study and ideas for future research.
Chapter 5: Implications

Study Recap

This study set out to explore issues related to the teaching of digital multimodal composition in first-year composition classes. After struggling to complete a model student assignment during a teaching practicum, I wanted to know why students were expected to create multimodal compositions with digital technology without being given specific instructions about using the technology. The assignment was focused on “multiliteracies,” or an individual’s linguistic or cultural identity expressed with multiple modes (Cope & Kalantzis, 2000). My search of the literature indicates that the field of compositions studies conceptualizes students as “self-teaching” users of technology (Brandt, 2001; Bump, 2013; Yancey, 2009) and that there is belief that composition classrooms should be used to teach the rhetorical use of digital technology rather than the basics of “mere tool use” (Eyman, 2015; Selfe, 1999).

There are also claims that personally relevant goals motivate students to overcome technical difficulties (ALA, 2012; Anderson, 2008; Dieterle & Vie, 2015). Selber (2004) builds on Duffy et al. (1992), arguing that composition classrooms using technology should focus on “performance based” rather than “learning based” technological impasses, a term which deemphasizes working with computers as users to focus on working through computers as composers pursuing a goal. These claims are complicated when we consider Becker’s “double learning curve” (2018, p. 7). When users pursuing a goal hit a technological impasse, they must stop working on that goal to attend to the problem before proceeding.
Bringing these observations and research findings together revealed a gap between expectations for students using digital technology and an understudied reality. I set out to explore that reality through a case study of a first-year composition class featuring multimodal projects requiring digital technology with no specific instruction in the use of that technology. The projects were based on identity, and students were given free topic choice for every assignment. Participants completed project reflections for each of their main assignments that formed the data for a qualitative analysis. The results help answer the research questions that guided this study, and I will discuss each of them in this chapter along with implications for teaching digital multimodal composition informed by my findings, including the suggestions participants made for improving instruction for these types of assignments. I conclude with some of the limitations of this study along with suggestions for future research.

Summary of Findings

*How do students in a first-year writing class use digital technology outside of class to create digital multimodal compositions?*

This broad question led to a complex picture of students at various levels of technical skill using a variety of programs. Although most students were familiar with PowerPoint and comfortable using the program, when students encountered unfamiliar screen capture technology, many of them struggled to record their presentations on their desktops while delivering narration and oftentimes including music playing in the background. For some students these struggles consumed their attention and efforts, resulting in project goals being negotiated based on the time spent and their ability to respond to the problems they encountered. Based on the lack of requests for help with the technology, students considered themselves responsible for figuring out how to use the
technology required, even when they encountered a conflict between the assignment specifications and the capabilities of the programs they were required to use. Students also created projects that were richly multimodal and sometimes technically ambitious. Although there was a great deal of struggle, the projects produced were interesting and showed thoughtfulness and care.

In what ways do students characterize the technical problems they encounter?

When attempting to use an unfamiliar program, students characterize technical problems as frequent, repetitive, and frustrating. Problems with unfamiliar technology were amplified for students because of a conflict between the assignment requirements and the capabilities of the programs. Problems with unfamiliar technology were sometimes impossible to solve, and no students sought technical help from the instructor. This may have been because their lack of familiarity with the programs made it difficult to understand what they were being asked to do, and it also may be because they consider themselves responsible for using the technology without support.

In what ways do students respond to these technical problems?

Analysis indicates that students are “self-teaching,” but also that the term “self-teaching” obscures a process that can be costly for students in time and attention and which may work against them achieving their personally relevant goals. Only four participants reported seeking on-line help, and the majority of students responded to technical problems with trial-and-error efforts that were time consuming and not particularly effective, which appeared to add to their frustration. Students reported modifying their approach and goals for their projects because they weren’t able to solve technical problems, and when they could not resolve their problems by the time the
assignment was due, some students turned in projects that were unsuccessful or that they were unhappy with.

*In what ways do students describe working with technology to create multimodal projects and achieve rhetorical goals?*

Students working with technology to create their projects focused on many aspects of design, including the control of spatial arrangement and thematic elements and through symbolic representation. Students also demonstrated awareness of reinforcing their message through multiple modes and media. They also evidenced a high degree of motivation to express their personal topics well and to be understood, including specific attention to addressing their audience effectively and shaping their projects to meet audience needs. The reflections reveal that one of the most frequently ways students reported connecting with their audience was through incorporating their physical presence into their projects.

Although the data collected do not indicate a clear connection between the goals students in this study pursued and their motivation to overcome technical problems, it is clear that students experience these problems frequently and that they can be difficult to solve; however, it is also clear that digital multimodal compositions and personal goals engage students in their projects to a high degree.

**Implications**

The results of this study illustrate some important considerations for instructors designing and teaching digital multimodal composition. Creating assignments based on assumptions that students are “self-teaching” creates a hidden curriculum that students grapple with outside of class. Unfamiliar technologies requiring students to spend time and attention addressing problems before continuing with their content will burden some
students more than others and may interfere with their practice of the rhetorical skills promoted in first-year composition classes. Including a technology requirement without considering these issues could obscure the difficulty some students may face.

The results indicate that applying the term technological impasse, as described by Duffy et al. (1992), to student experiences in digital multimodal classes is not necessarily an accurate fit. Participants in the study were intently focused on their content and saw technical problems as an impediment to be overcome rather than an opportunity to acquire the knowledge needed to use the computer. In other words, they didn’t learn how to use the programs beyond the bare essentials to complete the project. This shifts the focus on the project rather than on the technology, as students would not have encountered a technical problem without the need to complete a project in a particular way using a specific program. Instructors considering these types of technology requirements should also focus on the content of the projects, but creating assignments that require new types of technology means that students will also be teaching themselves a significant part of the assignment.

Instructors who assume students are “self-teaching” may also underrate the difficulty of what they are assigning and unintentionally compound technical problems. If technology requirements aren’t addressed in assignments prompts or discussed in class, students may get the impression that they are wholly responsible for the technological requirements, causing them to be reluctant to ask for help. The results of this complexity may be reflected in the projects of students who struggle to use the technology but do not seek help, making it difficult to assess all projects fairly.
Many if not most of the projects completed for the narrated documentary requiring a recording were of poor quality. The struggles students had impacted their projects in a negative way that, based on their reflections, students were aware of and bothered by. Students had difficulty capturing a “clean” recording due to problems with their equipment and environment, but they also struggled to coordinate their narration with the presentation. The reflections indicate that students understood the rhetorical situation, but they struggled to translate that understanding into well-executed projects. I believe this shows a connection between the use of technology, or technological literacy, and rhetorical literacy. If not for the reflections, I would have been unable to determine if students were able to practice rhetorical literacy successfully because of the poor quality of their projects. Instructors not requiring reflections or featuring reflections without a consideration of the technology risk missing the growth students attain.

These issues, working with multiple modes and technology, encountering technological impasses, and student experiences remain in tension at the conclusion of this project. Addressing technology in the classroom does not guarantee that students will not struggle to use it, and removing struggle from the learning process could even undermine that process. I argue though that the isolation students may experience based on how they interpret a lack of discussion about technology as the expectation that they are fully responsible for teaching themselves how to use it undermines the purpose of including students’ multiliteracies in the classroom. It is counterproductive to simultaneously invite students to include their lived experience in their academic life, encourage them to connect with others and feel represented in the classroom, if we send
them away conflicted about the relationship between their literacies and the use of technology.

Despite these issues, the data show that students working with digital technology and personally relevant content act as designers, and although it isn’t clear that personally relevant topics helped them overcome technological impasses, students appear to be highly motivated to produce effective content. Working to complete digital multimodal assignments animates the rhetorical situation for students, and instructors should invest in maximizing the rhetorical potential of these types of assignments while minimizing any negative impact requiring digital technology may have on students. Based on the results of this study, the amount of time a student spends on overcoming technical problems is related to their expression of frustration. This frustration appears to be a result of switching away from their content to trying to make the technology work. Although it is arguable that struggling with technology to complete a project is part of completing a project, there are ways to mitigate the negative emotions students may experience while struggling with both on a deadline. This involves attention to assignment design, teaching strategies, and assessment practices.

**Assignment design.** Instructors understanding what they’re asking for is vital to creating any assignment prompt, but this is particularly true for digital multimodal compositions due to the possibility for complications caused by technology. One of the findings that surprised me most in this study was how much of the difficulty I caused for students by assuming they would take care of the technology. The original narrated documentary assignment was a five to seven-minute video project that students were so reluctant to undertake that they asked for a class vote on including alternatives. Students
had already used a screen capture program to record their first assignment, so including this as an option seemed to be a good solution; however, in creating a more flexible assignment I failed to adjust the time requirements to match the capabilities of the screen capture programs they were familiar with. No student brought this to my attention. Instead, multiple students struggled to fit five to seven minutes of content into a recording that either topped out at five minutes with Jing or that couldn’t be paused or edited with Screencast-O-Matic. Holding students responsible for the technology allowed me to overlook important aspects of using that technology that caused students a great deal of difficulty. This is an additional consideration when assigning digital multimodal compositions; instructors need to resist the urge to rely on “self-teaching” students.

The need to reduce the impact of technical problems for the greatest number of students means that now more than ever instructors need to complete their own assignments to determine the assignment parameters but also so that they can experience the problems with technology that their students may potentially face. Increasing transparency about the use of technology is undermined if we don’t know the full extent of the work students need to put in to use a required technology. Students may interpret assignments too literally, so it’s also possible that instructors completing their own assignments can share their experiences with their classes, further encouraging students to seek the help they need and respond to technical problems flexibly.

One way to avoid introducing unexpected complications for students is to include flexibility in the choice of technology, which gives them more control over how to realize their projects. Emphasizing attention to content over technology shouldn’t take the form of assigning technology uncritically. In fact, emphasizing content can be undermined if
students become stalled by a technological impasse and hit the double learning curve. Assignment prompts should encourage a primary technology and type of composition but present a variety of technology options, allowing students to fall back on familiar programs if the primary technology proves too difficult, but it is important to consider how different technologies create different compositions. Instructors should consider a core set of features they want any project to have and provide multiple technological paths to getting there.

Although it has been argued that working with templates takes away the student’s opportunity to practice digital design (Arola, 2010), encouraging students to use design shouldn’t take precedence over encouraging them to develop their content using existing template options. Participants in this study were far more comfortable using templates than designing their own digital presentations, and it is likely that requiring students in the class to eschew templates in favor of original design would have resulted in resistance if not open revolt. Since students were so focused on their project content, even to the point of abandoning technologies they found too hard to use, requiring design would have taken them even further from their personally relevant topics and into a trial-and-error phase that would have undoubtedly eaten up a significant portion of time without yielding stronger project results.

Only one student described building his website (Michael, reflection #2), but even that student started with a basic structure and modified it to suit his purposes. Instead, students “designed” their projects by carefully considering their thematic elements such as colors, images, and spatial organization. With the web 2.0 movement already in the past, today’s digital technology is designed to allow for a broad array of customizations.
without the need to be a “builder” or a trained designer, so a focus on the design possibilities included in a piece of software would achieve more for students than requiring a more technically challenging approach to design. In addition to a nuanced consideration of the technical aspect of multimodal projects, instructors can help students by establishing and maintaining transparency about technology during class with equally nuanced approaches to teaching.

**Teaching strategies.** Teaching a FYC class based on digital multimodal composing doesn’t require the teaching of specific types of technology, but it does require honesty and transparency about the benefits and potential costs of using technology to produce what for many students are new types of compositions. Instructors who may perceive students as “self-teaching” may find it convenient to avoid prolonged discussions of technology in the classroom, both because they want the class time to focus on content and the rhetorical situation and because they aren’t comfortable using the technology and reluctant to reveal the fact. But much can be done in the way of describing technology as a necessary, beneficial, and also problematic part of multimodal assignments.

When introducing digital assignments, class discussions about some of the difficulties students may face while using the technology should be started early and continued throughout the semester. There could also be a statement in the syllabus concerning steps students should take to get help resolving their technical problems. If it is established early that using technology will usually result in encountering a barrier and that spending too much time trying to solve technical problems can cost time and have a negative effect on their projects, students can be encouraged to recognize problems and
cope with them early, even by switching to a different technology, instead of devoting excessive time trying to make a program work correctly and realize their project goals. These discussions could be grounded in students’ prior experiences with technology, including what problems they have had and what they find frustrating about using technology. Students could take a technology inventory of their past experiences to share with other students as a way to start the discussion on how to use technology to achieve goals without compromising those goals due to technical difficulties.

Addressing the use of technology as an inextricable part of a digital multimodal composition assignment could also take the form of encouraging students to develop a process method of technology use similar to that of process writing. Instructors taking students through the pre-writing, writing, revising, proofreading, and submission steps of composing can increase the consideration of the technological elements of the project by including consideration of how to use technology as part of each of these steps. Following a process approach to using technology could help embed technology into the assignment rather than relegating it exclusively to the student’s responsibility.

Students in the study universally avoided asking me for help with the technology. Although students did have limited time in class to work on their projects, when they asked me for help it was on expressing their content. Students did ask one another for help during the workshop periods of class time, and participants described other students as important resources for technological help; however, I conducted the class in the same way as the teacher training practicum discussed in the introduction: I went over the assignments with students, told them what technology to use without direction, and let them approach it in their own way. There were no group discussions on technology, nor
did I include tutorials doing class time. It is possible that students did not approach me about technology because they knew I was studying their use of digital technology, but it also may be because they didn’t perceive me as a resource. One way to counteract students’ possible reluctance to seek instructor help is to combine flexibility in both topic and technology choice, which can empower students to take control of their learning process.

Different technologies produce different compositions, and providing options that have a clear end product with each technology lets students choose the path they feel will best present their content. A focus on the rhetorical aspects of digital technology works best when the technology is given due consideration. Instructors may feel hesitant addressing the technology issue overtly, but stating your position as an instructor rather than a technical expert should not be done in a way that excludes you as a resource. Encouraging students to seek clarification on the assignment requirements can further empower them as learners, and if they ask for help from someone who is clear about their own limitations, the door is open for both instructor and student to seek appropriate help, sometimes even from other students in the class.

In addition to instructor honesty, encouraging students be honest with themselves and others about their experience with digital technology and what types of programs (PowerPoint, screen capture, video making, etc.) they feel comfortable with could promote an open atmosphere about difficulties students may be reluctant to admit or share. If students are encouraged to share their technical histories and difficulties, peer technical consultations can be set up and students encouraged to seek help from their classmates when they encounter technical problems. Including a workshop on problem
solving could also be a useful way to combat the isolation students may experience when they are stuck on technical problems and reluctant to seek help. Discussing technological impasses as a part of the process of using a program to achieve a goal may help students recognize those problems quickly and respond to them in productive ways rather than getting bogged down in trial-and-error sessions that eat up time and cause frustration. Even discussing the pros and cons of trial-and-error problem solving may help students identify patterns in their own behaviors that resemble Frand’s “Nintendo method” (2000) and help them tap into resourcefulness over repetition.

Along with transparency, open class discussions, clear instructions with flexible topic and technology choice, and promoting students’ ability to recognize technological impasses and respond to them productively, including “in progress” presentations can help students gauge where their projects are compared to other students. Multiple students in the class reported finding class presentations helpful, not just for engaging in dialogue with others about the assignment but for comparing how they were approaching the assignment to the approaches of their classmates, including the use of technology. Designing these types of activities as open and fairly unstructured can encourage lively and productive class sessions, and having the opportunity to share their topics and learn about others creates cohesion.

**Assessment practices.** When assessing digital multimodal compositions, instructors should be clear about the main purpose of the assignment and assess for content and rhetorical moves over polish. Awareness of how the project being assessed was impacted by the student’s ability to use the technology required means acknowledging the role technology plays in wide differences in the finished projects. It
can be difficult to disambiguate these differences, but including reflections with specific questions about the technology and goals for the project and how students achieved these goals can help (Alexander, 2012; Anderson, 2008; Bourelle & Bourelle, 2015).

In addition to providing context from the student about their project, reading the reflections as introductions before looking at the project also allows the students to influence your perception of their project. This is necessary when encountering digital projects beyond the scope of a virtual piece of paper because it is more difficult to identify the source of the differences between projects. Having an opportunity to introduce their project and state how it should be viewed can help promote clarity for them and empower them more as lawyers offering evidence rather than defendants waiting to be adjudicated. Knowing they will have to account for their project choices and results as an introduction could also help them assess their projects before submission.

Including a technology section in project rubrics with clear categories for assessing the incorporation of technology can also establish a range of expectations students can use to assess their own projects before submission. Rubrics could also include assessment guidelines for the rhetorical use of multiple modes separate from the technology used to deliver the composition, which could separate the digital from the multimodal in terms of assessment. These strategies can be incorporated into classes teaching digital multimodal composition in ways that demonstrate how content and media are both separate and interdependent. Ultimately, emphasizing a rhetorical approach to digital technology can be best accomplished through acknowledging the
tools used for these types of compositions. To rely on students to “self-teach” potentially undermines student, and instructor, success.

**Student Recommendations for Technology Support**

At the end of the semester students completed an in-class reflection asking them “What support could have helped you with the technology needed for multimodal assignments in this class?” Responses to this question ranged from “I think if I would have taken a class beforehand I would have been better prepared” (Kayla) to “I don’t think anything could have helped me learn how to deal with technology more, the rest of this was all up to me and my understanding of how to take on these assignments” (Jessica). By far the most common suggestion was to include tutorials in class (seven students), although three students specifically suggested having speakers in to provide instruction on how to use the technology required for the projects. Two students also mentioned working on learning about the technology with their classmates.
Chapter 6: Conclusion

Digital Multimodal Compositions and Rhetoric

Digital technology, multimodal composition, and personally relevant topics work together to animate the rhetorical situation (see figure 1 below), and the projects completed in this study illustrate that the whole is greater than the sum of its parts. The synergistic potential of digital technology, multimodal composition, and personally relevant topics motivates students as rhetorical communicators due to the unique features each brings to digital multimodal composing. The engagement of virtually every participant in this study demonstrates that despite the very real difficulties students encounter with technology, all three elements should be combined in FYC classrooms featuring multimodal composition.

Figure 1: Aspects of Digital Multimodal Composition

Personally relevant topics make students want to be understood.

“You’re the only English teacher I’ve had that’s encouraged self-expression and creativity. This made a huge difference in the amount of effort I put into the class. Since I liked the assignments, I put forth a more passionate effort. The assignments were challenging but I found that I wasn’t just doing the assignments for a grade like in my other classes, I actually enjoyed them” (Ava, in-class reflection).
When students are developing content about topics important to them, their relationship to the content increases their desire to communicate effectively. Students in the study spoke of their projects not as separate topics but as themselves, evincing a desire to be understood as individuals with worthwhile experiences and viewpoints. This linking of student to topic puts the student “on the hook” to represent content they feel personally responsible for. Creating these opportunities for students also places responsibility on the instructor to ameliorate the possible drawbacks of working with technology.

In addition to inspiring engagement and good faith efforts from students, an entire class pursuing personally relevant topics creates a group of subject experts practicing communication of that expertise. Students in the study each had an area of expertise that appeared to engender respect for one another and helped make the class collaborative. When each student has a different topic that is closely tied to their individuality, working together to create the most effective projects becomes a class goal everyone can invest in for themselves and for other students. Personally relevant topics are powerful ways for students to inhabit a classroom, connecting students to each other and to the instructor, and those connections are strengthened through the use of multiple modes.

**Using multiple modes allows students to express their personally relevant topics.** When assignments allow for multiple modes of expression, students who are highly motivated to express their topics are able to incorporate a range of modes that make composing a flexible and customizable activity. The more flexibility in how students are able to express themselves the more power they have to create effective compositions. Many students in the study reported using multiple modes not just to
represent their ideas but to reinforce them. They were aware of how theme can be expressed with structure, color, and image, and they used theme and symbolism frequently and effectively. Doing this with digital technology creates an even greater array of opportunities because technology facilitates design and because technology and multiple modes work together to create compositions that are more public than traditional essays. When students combined multimodal composition with digital technology, the concept of audience became real.

**Digital technology and multiple modes bring the concept of audience alive for students.** Creating multimodal projects using digital technology, even if the projects aren’t published on the internet, situates students within a field of interconnectivity that emphasizes effective communication to an audience. Digital technology is undoubtedly an important part of the lives of most students, and being the target of digital multimodal communication appears to have primed them to understand this type of communication in a nuanced way. Students repeatedly described wanting their audience to understand the importance of the topic being presented, but they went beyond wanting to convince their audience to articulating what the audience would specifically need in order to gain the fullest understanding of that topic.

Although this study found that relying on assumptions about students and technology obscures a complex reality, the solution is not necessarily to stick to familiar or easy to use programs. Although familiar technologies presented little difficulty for students, the unfamiliar gave students opportunities to push the boundaries of their composing abilities in new and interesting ways. One noteworthy way students shaped their projects to be effective was through the incorporation of their physical presence in
their compositions. Multiple students remarked on how using their voice to explain and represent their topics was the best way to convey their message and engage their audience. Although the screencapture programs proved to be difficult for students to use, recording their voices proved to be a popular rhetorical tool that students believed would be the best way persuade the audience.

**Limitations**

This study relies on a convenience sample from one class at one university; therefore, the findings cannot be generalized beyond the current context, and the participants’ experiences cannot fully account for the possible range of experiences in other settings and with other students. The number of participants was comparatively small, and data was collected in the form of subjective accounts, which also limits generalizability. The reflections that formed the dataset were also part of projects student participants submitted for a grade, and it is possible that may have influenced their reporting; however, the amount of candid information participants provided indicates good faith efforts. Despite these limitations, exploring these issues, even with just one class will hopefully provide interesting insight into students’ out-of-class practices.

As a long-time teacher of traditional writing practices, I have struggled to transfer my skills as an instructor to multimodal composition practices. Additionally, I am not what one of the study participants referred to as “tech-savvy,” so my perception of student struggles may be heightened by these facts. These factors may have played a role in how I represented multimodal composition to the student participants, especially since one of my concerns as an instructor is that these practices may be overly burdensome on students outside of class. My efforts to counteract this potential bias was to be as
transparent as possible with students, presenting the class and its assignments as opportunities for mutual exploration and remaining open to new possibilities in communication.

**Suggestions for Future Research**

Participants in this study demonstrated a high level of enthusiasm for working on their personally relevant topics. Despite the fact that many of the narrated documentary projects were poorly executed, most students were still able to express a strong understanding of the rhetorical situation in their reflection documents. Conducting this study with multiple classes could reveal more about the motivating power of personal stories and developing an invested understanding of the rhetorical situation. Classes featuring personal topics could also be compared to classes that don’t, which could show a difference in students’ progress toward rhetorical literacy based on topic selection.

Broadening this study to include multiple classes in multiple settings would also increase the number of participants and uncover additional out-of-class experiences related to using digital technology for multimodal projects. This would also provide additional data that could corroborate some of the subjective reporting from this study and increase the generalizability of the findings. The average age of students in this class was 19, with the oldest student being 25 years old. Having a class with non-traditional students could provide even greater complexity when considering the technology requirement in FYC classes. Additionally, there was no consideration of a student’s prior access to or use of technology, so future studies could determine the range of access across students to see if there were variations between those with less or more access.
Although Selber (2004) emphasizes a critical approach to technology, the descriptions of his approach to teaching with digital technology seem to indicate that the focus was on how to use technology to communicate rather than on exploring and communicating students’ multiliteracies. Since this study was designed to explore students as “self-teaching” users of technology and to see if their personally relevant topics motivated their use of technology, there was no discussion of a critical approach to technology, nor was there course content aimed at developing critical literacy in regard to technology. Future studies could examine participants in a class featuring a critical technical literacy component to explore how emphasizing a critical approach may affect students’ understanding of how they use the required technology.

Areas explored by this study that merit further investigation include finding ways to determine if pursuing personally relevant topics motivates students to overcome technological impasses specifically. Future case studies could also investigate classes designed based on the recommendations above to explore how attempts to mitigate the effects of technological impasses affects students. Especially if those classes featured some of the suggestions for support from the participants in this class, including peer-to-peer collaboration, in-class tutorials, and speakers invited to demonstrate technology.

**Conclusion**

This study was aimed at gaining a deeper understanding of what students in a first-year composition class experience when required to use digital technology to complete multimodal projects. Literature in the rhetoric and composition field supports a general belief that first-year students are “self-teaching” technology users and that FYC classes should be focused on a rhetorical approach to technology rather than teaching
students how to use technology. Through an analysis of their project reflections, this study demonstrated some of the ways students report struggling to use the technology and that conflicts inherent in the assignment design inadvertently caused additional complications for students. In the end, students started with a topic that was important to them, seized upon multiple modes and digital technology to represent and communicate that topic, and envisioned an audience that could be influenced in a variety of ways through multiple modes. Teaching this class was a powerful example of new possibilities in the digital age, and although the difficulties students faced when encountering technological impasses outside of the classroom were troubling and call for effective responses, there is no doubt that digital multimodal composition assignments contribute a great deal to the FYC curriculum that scholars should continue to explore and encourage.
Appendices

Appendix A: Consent Form

Multimodal Composition and Digital Technology: Investigating the Out-of-Class Experiences of Students in a First-Year Writing Class

Consent to Participate in Research
12/19/2017

Purpose of the study: You are being asked to participate in a research study that is being done by Dr. Tiffany Bourneille, the Principal Investigator, and Jennifer Morgan Sims from the English Department. The purpose of this study is to investigate the experiences of university students in a first-year writing class featuring instruction in multimodal composition. You are being asked to take part in this study because you are enrolled in Jennifer Morgan Sims's Spring 2017 English 120 class.

This form will explain what to expect when joining the research, as well as the possible risks and benefits of participation. If you have any questions, please ask one of the study researchers.

What you will do in the study: After agreeing to participate in this study, students will fill out a survey, attend the classes, and complete all of the normally required English 120 coursework. All coursework will be submitted on UNM Learn, where it will be collected as part of the study at the end of the semester. The instructor, Jennifer Morgan Sims, will not know which students have agreed to participate in the study, and no materials will be collected until after grades have been submitted at the end of the semester. When taking the survey at the beginning of the class, participants can skip any questions that makes them uncomfortable and they can stop the survey at any time.

Risks: Participating in any research study carries the risk of stress, emotional distress, inconvenience and possible loss of privacy and confidentiality, but since participation in this study does not require anything beyond access to student work after final grades have been submitted, those risks are minimal. The researchers will make every effort to ensure the wellbeing of student participants and protect their privacy.

Benefits: There will be no direct benefit to you from participating in this study. However, it is hoped that this study will help researchers gain a deeper understanding of the needs of university students in English first-year writing classes and improve instruction for these students.

Confidentiality of your information: In order to ensure confidentiality and protect student privacy, the researchers will take the following steps: 1) Should you choose to participate in the study, the Principal Investigator will collect this consent form with your signature and keep it in her locked office on UNM campus until after final grades have been assigned. 2) The instructor of this class will have no knowledge of which students are participating and which have chosen not to. You are under no obligation to participate in this study, nor will your participation have any effect on your assessment for the English 120 course in which you are enrolled. 3) After the final grades have been entered into LobuwWeb for all students in the course, the student investigator will use the consent forms to assign a number and pseudonym to each of the participants. The student investigator will remove all student names from all class materials, replacing the student's name with their assigned number and pseudonym. The number and pseudonym will be the only information used to identify participants. The list of student participants and their numbers will be kept on the Principal Investigator's password protected computer until it is deleted at end of the study. We will take measures to protect the security of all your personal information, but we cannot guarantee confidentiality of all study data. The University of New Mexico Institutional Review Board (IRB) that oversees human subject research may be permitted to access your records. Your name will not be used in any published reports about this study.
You should understand that the researcher is not prevented from taking steps, including reporting to authorities, to prevent serious harm of yourself or others.

Payment: You will not be paid for participating in this study.

Right to withdraw from the study: Your participation in this study is completely voluntary. You have the right to choose not to participate or to withdraw your participation at any point in this study without penalty. If you choose to sign a consent form and then later decide that you do not want your data to be used as part of the study, you can e-mail Dr. Tiffany Bourelle at [email protected] and request that your consent form be destroyed. The researchers may also remove a participant from the study if that student withdraws from the class. Any data collected from students who withdraw from the study will not be used in the analysis.

If you have any questions, concerns, or complaints about the research study, please contact:

Dr. Tiffany Bourelle, English Department, 1 University of New Mexico, Albuquerque, NM 87131.

If you would like to speak with someone other than the research team or have questions regarding your rights as a research participant, please contact the IRB. The IRB is a group of people from UNM and the community who provide independent oversight of safety and ethical issues related to research involving people:

UNM Office of the IRB, (505) 277-2644, irbmaincampus@unm.edu. Website: http://irb.unm.edu/

CONSENT

You are making a decision whether to participate in this study. Your signature below indicates that you have read this form (or the form was read to you) and that all questions have been answered to your satisfaction. By signing this consent form, you are not waiving any of your legal rights as a research participant. A copy of this consent form will be provided to you.

I agree to participate in this study.

Name of Adult Participant          Signature of Adult Participant          Date

Researcher Signature (to be completed at time of informed consent)

I have explained the research to the participant and answered all of his/her questions. I believe that he/she understands the information described in this consent form and freely consents to participate.

Name of Research Team Member       Signature of Research Team Member       Date
Appendix B: Composition Program Student Learning Outcomes

A. **Rhetorical Situation and Genre:** analyze, compose, and reflect on arguments in a variety of genres, considering the strategies, claims, evidence, and various mediums and technologies that are appropriate to the rhetorical situation

B. **Writing as a Social Act:** describe the social nature of composing, particularly the role of discourse communities at the local, national, and international level

C. **Writing as a Process:** use multiple approaches for planning, researching, prewriting, composing, assessing, revising, editing, proofreading, collaborating, and incorporating feedback in order to make your compositions stronger in various mediums and using multiple technologies

D. **Grammar and Usage:** improve your fluency in the dialect of Standardized Written American English at the level of the sentence, paragraph, and document

E. **Grammar and Usage:** analyze and describe the value of incorporating various languages, dialects, and registers in your own and others’ texts

F. **Reflection:** evaluate your development as a writer over the course of the semester and describe how composing in multiple genres and mediums using various technologies can be applied in other contexts to advance your goals

G. **Research:** use writing and research as a means of discovery to examine your personal beliefs in the context of multiple perspectives and to explore focused research questions through various mediums and technologies

H. **Research:** integrate others’ positions and perspectives into your writing ethically, appropriately, and effectively in various mediums and technologies

I. **Research:** compose a research-based academic argument in one of various mediums and technologies by identifying, analyzing, evaluating, and synthesizing sources, which must include secondary sources

J. **Research:** analyze and describe the writing and research conventions of an academic field in order to understand the different ways of creating and communicating knowledge
Appendix C: Study Instrument MWA #1

Main Writing Assignment #1: “The Story of Us” An Identity Group History
Research Project

“The past is never dead. It’s not even past.” — William Faulkner, Requiem for a Nun

Requirements: A four to five-page research paper presented as a multimodal project (i.e. a 5 to 7-minute audio project or a short video documentary).
Due: Thursday, February 23 by 9:00 P.M. on Learn
Value: 60 points
Reflection: Your submission will also include a 2-page reflection (see instructions below).

Topic: Understanding ourselves and interacting with the world requires a concept of who we are and where we came from. Our first MWA is a chance to explore and present the history that is embodied within yourself and the people closest to you. The term “identity group” is used expansively here and can include the people whose influence have shaped your identity, including within and beyond the traditional notion of family. The idea is to examine where you are now and how you know what you know and then connect that to the trajectory you are a part of as an inheritor of history.

Rhetorical Situation: This assignment asks you to research your “family” (broadly defined as the group that has influenced your identity) history and present your “Story of Us,” with an emphasis on how the history of an identity group manifests in individual identity. Your identity group history will be presented as a multimodal sound or video project featuring researched background material and aimed at an audience outside of the group being presented. This text is intended not only to represent your identity group history and what is unique about it but also to explain that history to an outsider. Think of creating this history so that your reader might have a better idea of what makes your identity group history special, how that history is connected to a larger history, and how that history is represented in your identity. You must conduct research in the form of interviews, examining and collecting archival materials such as photos, videos, letters, etc., as well as secondary research into how your immediate identity group is part of a larger identity group (e.g. Latinos, African Americans, white Americans, LGBTQI individuals, etc.). What are the languages, values, and goals of the group you are a part of?

Specifics: You will create a research project of your identity group and showcase it in a multimodal medium. Your choices are an audio project (5-7 minutes) or a short video documentary (5-7 minutes). For instance, you might choose an audio project if you were creating this project for a radio slot. Music may be an important part of your identity group, so it would be important to interweave the music in this type of medium. In fact, it might be partly why you choose this medium. Another reason maybe be because the people you might interview may not feel comfortable being in front of a camera. You also have the choice of a video (a short documentary) to showcase the project to the general public.

Your draft for this project will be the results of your research written up as a
narrative and a script (if you choose an audio project) or storyboard (if you chose a video project).

**Multimodal Component:** As you write, consider the audience, purpose, and the conventions of the venue in which you intend to publish the piece (i.e. the rhetorical situation).

Sound project: If you choose to create a sound project, it must be a five- to seven-minute audio recording in which you discuss your “Story of Us.” Note: You must incorporate more than one mode within this sound project. For instance, you cannot simply use your voice or the voice of a person you interview for the project alone; you must weave music or other sound into the piece as well as your voice-over narration.

Video: If you choose to create a video for this project, it must be a five- to seven-minute video in which you discuss your “Story of Us.” You could draw on many genres to create this video, including the video blog, the documentary, the TV interview, etc. Be creative! Note: You cannot simply pull a video from YouTube for this assignment; you must create a video using either iMovie, Windows MovieMaker, or some other video creator.

**Research:** Your data will be primarily drawn from interviews and exploring your family’s representational archive materials (e.g. photographs, videos, letters, etc.) but you may also include scholarly sources on your racial, ethnic, or other identity group (e.g., LGBTQI), or web sources. Use MLA or APA format when citing your sources (See the Purdue OWL for specific citation instructions).

**Reflection:** For this project you will need to write a reflection accounting for your choices. This reflection will help me evaluate and grade your project, so make sure you carefully consider the following questions and provide an answer for each one of them:

1. What are the goals you had for this project and how do you think the piece achieves them?
2. Who is the audience? How did this impact your choice of medium? In other words, why is the medium (the video or sound project) the best choice for your audience and your purpose?
3. What were your impressions of the technology you chose to compose with for this project?
4. What rhetorical decisions impacted your choice of technology?
5. What were the challenges with technology that you faced in this project? How did you overcome these challenges? What was easiest about using this technology? What did you like?
6. What else do you want me to know about the project and your goals and choices that will help me give you feedback?
Appendix D: Study Instrument MWA #2

Project #2: Rhetorical Analysis of a Song

“When I hear music, I fear no danger. I am invulnerable. I see no foe. I am related to the earliest times, and to the latest.” — Henry David Thoreau

Specific Requirements: Multimodal Rhetorical Analysis of a song presented on a website
Due: Friday, March 24
Value: 100 points

Reflection: Your submission will also include a 2-page reflection (see instructions below).

Assignment Context: The act of organizing sound in time goes back for thousands of years and is an inextricable part of human culture. Our lives are filled with music, and the power of music to find resonant frequencies within us changes how we see and relate to the world. However, we rarely take the time to figure out why the music we love is so powerful and meaningful to us. This assignment is an opportunity to determine the ways in which a song is situated within a specific context and explore how it attempts to persuade listeners to participate in a worldview and agree with an underlying argument.

The Task: For MWA #2 you will select a song that resonates with you and explore why through a rhetorical analysis. This requires doing some research to familiarize yourself with the background of the song, including who wrote it, what album it is on, under what circumstances it was produced, who recorded it (sang on it or played on it), etc. Next, you’ll need to research a short profile on the artist who recorded the song: where are they from, what genre of music do they work in, what are some statements they’ve made about their music? etc. Then you’ll need to locate some lyrics (if there are any) and determine if they are accurate. Listen to the song with the lyrics in front of you and write down your ideas of what the song is promoting/arguing for. How does the music contribute to the overall mood/meaning of the song? Finally, what can be determined on the basis of all this information? Your final project will present your findings.

Rhetorical Concepts: Apply the rhetorical concepts discussed in chapter 9 in Writing Today, specifically Ethos, Pathos, and Logos.

Medium: Your rhetorical analysis will be presented as part of a webpage dedicated to the song you have selected. You can use Weebly, Wix, or Google Sites to build your site. Your website must have at least two pages and, in addition to your rhetorical analysis, it must feature multiple modes such as pictures, a video or audio recording of the song, and a lyrics page (please provide a translation of the lyrics if they are in a language other than English). You are encouraged to use the website designer to its fullest potential with hyperlinks, a page index, and visual design elements that work to represent the song and your analysis.

Organizing and Drafting Your Rhetorical Analysis: Consider using the following outline for drafting your rhetorical analysis

1. Introduction
Reflection Instructions:

At the completion of your rhetorical analysis, reflect back on your writing process, your goals and choices, and thinking you did for this sequence.

Due: on Learn (as a Word document in addition to the link to your website)

Requirement: 2 pages

Reflection Prompt:

GOALS

1. What, specifically, (beyond satisfying the basic requirements of the assignment) is this piece trying to accomplish?

CHOICES

2. What approach did you take to your analysis?
3. What website builder did you decide to use and why?
4. How did you design and format your website and why? How does this design further your interpretation of the song you chose?

RESULTS

5. How did the various choices you made allow you to accomplish your goals for this assignment?

STUDENT LEARNING OUTCOMES

6. Choose three of the Student Learning Outcomes and describe how you practiced the skills involved while composing your memoir project. Be sure and provide specific examples from your project.

Format: Use the MLA guidelines to format the appearance of your reflection. Upload your reflection to Learn as a pdf or .doc/.docx file. Use 12-point, Times New Roman font and double space your document. Remember to name your file with your last name and Reflection.
Main Writing Assignment 3: Virtual Time Capsule

“What life half gives a man, posterity gives entirely.” — Goethe

The Context: The opening of the pyramids in Egypt by Western archeologists in the early 20th century captured the imaginations of people around the world, some of whom were both fascinated and frustrated by the lack of information left by ancient Egyptians about the contents of these “unintentional” time capsules. The result was a flurry of time capsule activity focused on preserving not only the objects of the present but also on providing sufficient recorded context for those who will open the time capsules in the (sometimes very distant) future.

The Task: For MWA #3 you will create a time capsule containing objects you collect from your life and describe for your intended audience. This is a virtual time capsule, so you will capture the items digitally (as pictures, videos, or audio recordings) and write descriptions of what they are and what they do. You’ll need a manifest that sets the context of your collection in the form of a narrative describing why you chose the items you did and what you hope your audience will learn about you and our time through viewing your items.

Rhetorical Situation: Making this time capsule requires attention to three main areas of concern: 1) selecting representative objects, 2) creating a descriptive manifest of this cargo when it is launched on the stream of time, and 3) creating item tags identifying each item and setting the context of its use. This assignment asks you to select items for your own virtual time capsule, write descriptions of each item, and create a manifest that provides context for your audience (Why did you choose to include these items? What do you hope they will learn about you and your time by viewing them?).

Specific Requirements:

Due: Thursday, April 27 by 9:00 P.M. on Learn

Value: 150 points or 15% of your course grade

Reflection: Your submission will also include a 2-page reflection (see instructions below).

Audience: This is a “millennial” time capsule, so your audience for your MWA #3 is people who will “open” it five thousand years from now in the year 7017.

Medium: Your time capsule will be preserved in a digital format (PowerPoint presentation or website) that you submit for this assignment. Your reflection will be submitted separately as a word document.
Contents: Your time capsule must include a minimum of fifteen items chosen from your everyday life. You don’t necessarily need to venture far to find these items, but focus on creating a comprehensive collection that represents you as a person living in the year 2017.

Descriptions: Each item needs a 100-word description of what it is and how it works in your life. This is where you create the context for your collection.

Manifest: A two-page narrative description of your time capsule as a whole addressed to the people who will open it must be included as an introduction (note: you will probably write this manifest after you have chosen your items and written their descriptions). This manifest should include what date the time capsule should be opened, why you assembled it, why you chose the items you included, and what you hope the people of the future will understand about you and our time (hint: check the Book of Record for Cupaloy and use their headers).

Reflection Instructions:
At the completion of your time capsule, reflect back on your reading, our class work on goals and choices, and your work on this sequence.

Due: Thursday, April 27 by 9:00 P.M. on Learn as an MLA formatted Word document in addition to your time capsule

Requirement: 2 pages

Prompt:
GOALS
1. What, specifically, (beyond satisfying the basic requirements of the assignment) is this piece trying to accomplish?

CHOICES
2. What specific rhetorical, material, methodological, and technological choices did you make in service of accomplishing the goals articulated above?
3. What is one plan for this assignment you discarded in favor of the one you did follow?
4. Why did you end up pursuing this plan as opposed to others you came up with?

RESULTS
5. How did the various choices you made allow you to accomplish your goals for this assignment?

STUDENT LEARNING OUTCOMES
6. Choose two of the Student Learning Outcomes and describe how you practiced the skills involved while composing your project. Be sure and provide specific examples from your project.
Appendix F: Study Instrument Portfolio Prompt

First-Year Writing Capstone Project: The Portfolio

Due: Finals Week, Thursday, May 11 by 9:00 P.M. on Learn
Value: 350 points or 35% of your course grade

The portfolio is worth 35% of your final grade. You must submit a passing portfolio to pass English 110, with a 74% (C) or above.

The portfolio consists of three elements: 1) a 4-page reflective literacy narrative, 2) a creative revision of one of your Major Writing Assignments, and 3) a description of the choices you made for your creative revision and why you made the choices you did. The specific requirements for each of these elements are discussed below.

PART ONE: LITERACY NARRATIVE

Rhetorical Situation: As an introduction to your portfolio, you are asked to create a literacy narrative about your experience in English 120. Your narrative should explore the following questions: “How has English 120 improved my understanding of the rhetorical situation?” and “How will what I have learned help me respond when encountering new rhetorical situations in the future?”

- **Topic:** You are being asked to tell a story that explores how you gained knowledge, insights, and skills in English 120 and describe how this experience will help you understand how to write for future situations.

- **Audience:** Your audience is your English 120 classroom. This community includes yourself, your classmates, and me, your instructor. But the community also includes other writing instructors at UNM, the Core Writing Program, the Department of English Language and Literature, and the University itself.

- **Purpose:** Convince the reader that you have learned and practiced the SLOs and are ready to go forth as a competent writer. Do this by 1) reflecting on and tell the story of your learning in English 120, 2) exploring how you have developed and will continue to develop as a writer in the future, and 3) demonstrating your understanding of the SLOs.

- **Angle:** Argue convincingly about your ability to move on successfully by presenting a knowledgeable discussion of the SLOs we have covered in English 120 and describe how you have practiced them successfully. You must discuss SLO A (Rhetorical Situation and Genre) and SLO F (Reflection), but incorporate the rest of the SLOs where appropriate. Be sure and reference the SLOs specifically when you discuss them.

- **Context:** As a student completing the first-year writing program at UNM you must demonstrate to your peers and instructors that you understand the concepts underlying the design of the class and the reasons why we study and practice
these concepts. Your portfolio justifies the course design and SLOs for the program.

- **Evidence:** Incorporate evidence from your work in this class to help illustrate your story and your learning. Show how this work demonstrates your learning in this class.

**Description of Genre:** You are being asked to create a literacy narrative as an introduction to your portfolio. The literacy narrative is a micro-genre of the memoir genre. Please refer to the chapter on memoirs in your *Writing Today* textbook for information about this genre and a few examples of literacy narratives.

**Choice of modes and medium:** You are encouraged to include multimodal elements—such as alphabetic text, speech, moving and still images, sound, or color—in your literacy narrative.

**PART TWO: CREATIVE REVISION**

In addition to your literacy narrative, you will include a creative revision of one of your MWAs as evidence of your learning. Unlike a traditional revision, which requires you to improve your composition for the same audience, purpose, and context, your goal in this creative revision is to repurpose and alter your MWA for an entirely new rhetorical situation and genre.

You will select a new audience, purpose, and angle for your revision and remake your project into something new. Same topic, new rhetorical situation.

**Writing Assignment Details:** First, choose one of your MWAs to creatively revise for this assignment. Next, design a new rhetorical situation for your MWA. Choose a different audience and different purpose from the original assignment. Then revise your MWA to fit this new rhetorical situation, making changes to the genre and medium as appropriate. Include this creatively revised MWA as the centerpiece in your portfolio.

**PART THREE: DESCRIPTION OF CHOICES**

Finally, create a 1 to 2-page description of your creative revision that identifies:

1. Your new rhetorical situation (audience, purpose, angle, and context), how this differs from the rhetorical situation for the original MWA, and why you chose to make these changes.
2. What changes you made to the MWA for the creative revision, including changes to the genre and medium of the composition and a discussion of why you chose to make these changes.

Include this description with your revised MWA.


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