SNEAD, ROBIN LYNNE. Tracing Activity: The Multimodal Composing Processes of First-Year Writing Students. (Under the direction of Dr. Susan Miller-Cochran).

This ethnographic study examined the composing processes of novice multimodal composers as they developed digital autoethnography videos for an assignment in a first-year writing course at a large southeastern university. Participants included six student volunteers from a single section of the university’s required first-year writing course. The research questions focused specifically on the processes the students engaged in when composing multimodally, how they made rhetorical choices and decisions, and how they navigated the use of various technologies as they composed. Data was collected over a seven-week period (the duration of the students’ work on the project) through classroom observation, interviews, written reflections, collection of project artifacts, and screen capture recording. The data indicate that students engage in two phases of intellectual work as they compose multimodally. While the phases are distinct in the types of actions and operations involved, they are recursive, intertwined, and interrelated. Students’ choices and decision-making are influenced by a wide range of textual and contextual factors, including the mediating nature of their tools of inscription. Students use trial and error as well as resources such as YouTube and Google to navigate unfamiliar technologies as they compose. The results suggest a new model of composing involving phases of conceptualization and actualization, and indicate that further study is needed into the roles of technological anxiety, off-task activity, and procrastination in composing. Further, results indicate that multimodal assignments do address the goals of first-year writing courses as defined by the *WPA Outcomes Statement for First-Year Composition.*
Tracing Activity: The Multimodal Composing Processes of First-Year Writing Students

by

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A dissertation or thesis submitted to the Graduate Faculty of North Carolina State University in partial fulfillment of the requirements for the degree of Doctor of Philosophy

Communication, Rhetoric, and Digital Media

Raleigh, North Carolina

2013

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To Andrew. I love you to the moon and back.
BIOGRAPHY

Robin L. Snead is a scholar with primary research interests in multimodal composition and pedagogy. She is also interested in issues of digital literacies and writing program administration. Prior to her graduate work in Communication, Rhetoric, and Digital Media at North Carolina State University, Robin received her MA from the University of North Carolina at Pembroke, and her BA from the University of North Carolina at Chapel Hill, both in English Education. She taught Communication Skills and English for twelve years in the public schools, and earned certification from the National Board for Professional Teaching Standards in 2001. She currently holds NC teaching certification in English, grades 9-12; Communication Skills, grades 6-8; and Academically Gifted Education, grades K-12.

Robin has seven years of experience as an instructor of composition in higher education. She teaches at the University of North Carolina at Pembroke, where she works primarily with a group of at-risk, basic writing students in a freshman bridge program, both as their instructor and their advisor.

As a part of her doctoral work at NC State, Robin has completed research on multimodal composition, composition pedagogy, digital literacies, and the staffing of first-year writing programs. She has given presentations at the national Conference on College Composition and Communication (CCCC), Computers and Writing (C&W), the Southern States Communication Association annual conference (SSCA), and several other local and regional conferences. Her research bibliography titled “Transfer-Ability: Issues of Transfer and FYC” was published by WPA-CompPile, and she has two forthcoming collaborative publications.
ACKNOWLEDGMENTS

Although I don’t really remember this myself, my mother tells a story of the day she was awarded a second Master’s Degree, and our family attended her graduation ceremony. It was the first time I’d ever seen graduation regalia, and I was, apparently, in awe. When mama tells the story, she says that I was “not at all impressed” with her robe, or hood, or mortarboard. Instead, I wanted to know when she was going to get her “funky hat,” my childhood description of the doctoral tam. She replied that she would likely never get one of those, that she would leave that up to me. A journey was set in motion. And what a journey that has been.

I have not taken the traditional route to the PhD. Most people don’t enter a face-to-face PhD program ninety miles from home with no ability to move, at age 36, while teaching full time at another university, and while also raising a child as a single mom after a separation and later a divorce. That has been my path. Call me crazy. I consider myself lucky. Not everyone has this opportunity. I am grateful. Through the good times as well as the frustrating ones, I have always been grateful.

Many, many people have helped me along this path, particularly as I completed this dissertation. First, I have the most fabulous committee any graduate student could hope to have. Rock stars, each one of them. My chair, Dr. Susan Miller-Cochran, has helped me to navigate my less-than-traditional path, helped me think through the conceptualization of this study, and provided guidance and support along the way. She also has an innate ability to know when I’m about to fall over the proverbial ledge! Dr. Chris Anson, Dr. Deanna Dannels, and Dr. Carolyn Miller offered valuable comments, insight, and suggestions that
pushed me to think and to think again. I know that their thoughts have made this a better project. I would also like to acknowledge of Dr. Nancy Penrose, whose assistance during a directed readings course helped me to determine the focus for this study. Dr. Jason Swarts introduced me to activity theory, and although it took some time for me to understand its usefulness, I am most appreciative. I would be remiss not to thank Dr. Kenneth Zagacki, who taught me in my first semester of doctoral study, agreed to direct my first directed readings course, and most graciously stepped in to substitute for Dr. Deanna Dannels who was unable to attend my defense.

Throughout my program, I have had a wonderful cadre of colleagues in my cohort who have been critical to my success in graduate school. A few deserve special recognition. I would like to thank my “twin” Dana Gierdowski for her unwavering support, insight, and collaboration, and Jen Ware for her technical help and ideas. I thank Dana, as well as Lauren Clark and Wendi Sierra, for performing reliability checks on my data. Wendi has been my long-distance writing partner in the last crazy weeks of writing, and our “check ins” offered both motivation and morale maintenance. Finally, Kevin Brock never once failed to respond—and quickly—to my emails or my status updates on Facebook when I was stuck. I am grateful for the friendships developed with each of these individuals, as well as with others I’ve met through the program.

I owe a huge debt of gratitude to the instructor who welcomed me into her class, and who, unfortunately, must remain unnamed here to protect the confidentiality of the study. Not only did she allow me to come in to her classroom, to sit in on student-teacher
conferences, and to ask questions, she has continued to provide support and answers long
after the official observations ended. She is a gem.

I have met many wonderful people in my time at NC State who are always willing to
share their time and their ideas. Although there are too many to single out here, I truly
appreciate and value each and every one of them. When people ask me, jokingly, how this
UNC-Chapel Hill graduate could ever choose NC State for graduate school, it is very easy
for me to respond. It’s the people. They are the best.

I also wish to acknowledge the support of my colleagues and the administration at
UNC-Pembroke. I would not have been able to complete this degree without the financial
support from the Native American-Serving, Non-tribal Institution Grant (NASNTI) that
offered partial funding in the early stages of my study. I am grateful for the support of my
colleagues in the College Opportunity Program and the encouragement of those in the
English department.

I also thank my family. My parents have always supported me in every way possible
and have always believed in me no matter what. My uncle, a former Vice Chancellor for
Development at Appalachian State University, has consistently encouraged me through this
process. Finally, there is my son, Andrew. I will never be able to make up for the sacrifices
my son has made to enable me to complete this degree. In the space of his life that he can
remember, his mommy has always been studying, and he has always been okay with it. He’s
brought me water, given me hugs, cheered me on, and he’s been patient. I could not ask for a
better child.
TABLE OF CONTENTS

LIST OF TABLES .................................................................................................................. xi
LIST OF FIGURES .................................................................................................................. xii
INTRODUCTION ..................................................................................................................... 1
CHAPTER ONE: REVIEW OF LITERATURE ........................................................................... 9
  MULTIMODALITY ................................................................................................................... 9
    Defining Multimodality ....................................................................................................... 9
    Legitimizing Multimodal Means of Communication ....................................................... 15
    Focusing on Multimodality in Composition Courses ..................................................... 18
    Theoretical Perspectives ................................................................................................... 21
    Developing Multimodal Compositions .............................................................................. 29
  WRITING PROCESSES ....................................................................................................... 32
    An Overview of Process Scholarship .............................................................................. 32
    Representations of Multimodality in Process Scholarship ............................................. 38
    Process and Rhetorical Invention ...................................................................................... 43
    Concluding Thoughts ....................................................................................................... 45
  THE MULTIMODAL COMPOSING PRACTICES OF FIRST-YEAR COMPOSITION STUDENTS ....... 47
CHAPTER TWO: METHODS .................................................................................................... 50
  SAMPLING AND SITE DESCRIPTION .............................................................................. 54
  PARTICIPANTS, DEMOGRAPHICS, AND BACKGROUNDS ............................................. 60
    Writing Experience .......................................................................................................... 64
    Familiarity and Comfort with Technology ...................................................................... 67
  INSTRUCTOR PROFILE AND COURSE DESIGN .............................................................. 75
    Instructor Profile .............................................................................................................. 75
    Course Project Design ..................................................................................................... 76
  DATA COLLECTION ........................................................................................................... 82
Researcher Role .................................................................................................................. 82
Screen Capture Recording ................................................................................................. 85
Interviews ............................................................................................................................ 86
Work Samples ..................................................................................................................... 89
DATA ANALYSIS .................................................................................................................. 89

CHAPTER THREE: RESULTS FROM OBSERVATION, INTERVIEWS, AND STUDENTS’ WRITTEN REFLECTIONS .................................................................................................................. 95

ACTS OF COMPOSING ......................................................................................................... 95
Inventing ................................................................................................................................. 97
Assembling, Arranging, and Coordinating ........................................................................ 105
Navigating the Tools ............................................................................................................ 109
Crediting Sources ................................................................................................................ 118
Procrastinating ...................................................................................................................... 119

INFLUENCES ON INVENTION ............................................................................................. 122
Exigency and assignment limitations ................................................................................ 123
Instructor Influence ............................................................................................................ 127
Purpose and Goals ............................................................................................................... 131
Intertextual Influences ....................................................................................................... 133
Influences on Modal Possibilities ....................................................................................... 139
Awareness of Audience Expectations ............................................................................... 147
Interactions with Others about the Text .......................................................................... 150
Limitations of the tools of inscription or the user’s knowledge of those tools ............... 156
Students Perceptions and Feelings about the Project ....................................................... 157

SUMMARY ............................................................................................................................. 160

CHAPTER FOUR: RESULTS FROM A SINGLE STUDENT’S SCREEN CAPTURE .......... 161

BACKGROUND INFORMATION ON TYLER ....................................................................... 161

OVERVIEW OF TYLER’S SCREEN CAPTURE VIDEOS ....................................................... 165
LIST OF TABLES

Table 1. Participants’ self-reported familiarity with various technologies............................68
Table 2. Participants’ self-reported past uses of technology..............................................71
Table 3. Participants’ preferences and beliefs about technology use....................................74
Table 4. Tyler's self-reported familiarity with various technologies.....................................164
Table 5. Tyler's self-reported past uses of technology.....................................................165
Table 6. Dates and lengths of Tyler’s screen capture recordings......................................166
Table 7. WPA Outcomes for First-Year Composition (Council of Writing Program
        Administrators, 2008)....................................................................................................254
LIST OF FIGURES

Figure 1. A screenshot from Tyler’s script-in-progress..............................................................99
Figure 2. A sampling of Amanda’s post-it notes used for planning..............................................100
Figure 3 Maryam’s storyboard ....................................................................................................102
Figure 4 Catherine’s storyboard with comments from her classmates.........................................103
Figure 5. First part of the assignment sheet for project 3: Digital autoethnography. ... 124
Figure 6. One screen shot from Morgan’s text messages with friends.................................152
Figure 7. A screen shot from Morgan’s video showing “the glitter pack.” ...............................153
Figure 8. Number of actions within themes in Tyler’s screen capture recordings..............168
Figure 9 Number of actions within categories in the theme of Invention and Decision
    Making........................................................................................................................................169
Figure 10. A screenshot from the 00:00:00 mark of the November 20th capture...........173
Figure 11. A screenshot from the 00:10:41 mark of the November 20th capture...........174
Figure 12. Screenshot from the 00:10:55 mark of the first November 21st capture. ... 176
Figure 13. A screenshot from the 00:11:44 mark of the first November 21st capture. 177
Figure 14. A screenshot from the first November 21st capture, showing the "cutting" of
    material that is to be relocated.....................................................................................................178
Figure 15. A screenshot from the first November 21st capture, showing the new
    location of previously "cut" material............................................................................................179
Figure 16. A screenshot from a November 21st capture showing the artifact ecology of
    source material and script...........................................................................................................181
Figure 17. A screenshot from November 6th showing production notes.........................182
Figure 18. A screenshot from November 8th showing reminders and placeholders... 183
Figure 19. The iMovie interface, labeled................................................................. 189
Figure 20. Tyler selecting an image from his downloads folder................................. 194
Figure 21. Tyler dragging an image from his downloads folder into the storyboard... 194
Figure 22. Tyler recording an audio track in Audacity.............................................. 197
Figure 23. Tyler dragging the audio file "Transition" into the storyboard.................... 197
Figure 24. The iMovie interface just after Tyler imported an interview....................... 199
Figure 25. Tyler adding a citation for an image....................................................... 201
Figure 26. A screenshot from Tyler's video, showing part of his thesis statement...... 203
Figure 27. A screenshot from Tyler's video showing an interview with a superimposed
question....................................................................................................................... 204
Figure 28. Tyler adjusting the Ken Burns effect......................................................... 206
Figure 29. Tyler adjusting the length of an image..................................................... 207
Figure 30. Frequency Tyler's off-task activity by work session date......................... 209
Figure 31. Tyler's activity system.............................................................................. 217
Figure 32. Acts of Composing.................................................................................. 222
Figure 33. Diagram of the writing process emerging from this study .................... 224
Figure 34. Students’ processes for assembling the elements of their videos........... 241
INTRODUCTION

About a year ago, I began working to build a website that accurately reflects my scholarly identity, a website that might offer visitors a snapshot of who I am as a teacher, as a researcher, as a thinker, as someone who might make a useful contribution to the somewhat stable, somewhat dynamic field of Rhetoric and Composition. Constructing this website has been a challenge for me. Even as a PhD student in Communication, Rhetoric, and Digital Media, I had no prior experience with HTML code, and only pedestrian knowledge of issues of design, typography, layout, and readability. Although I have studied theories of multimodality, analyzed the multimodal work of others, and opened assignments in my classes to modalities beyond alphabetic text, I have been paralyzed by the development of this website, a website that serves as a representation of my identity, that conveys a rhetorical message about what matters to me. Further, learning how to make the site “do” what I want it to do—learning to link the pages, developing the navigational tools, focusing on usability—have all been challenges. These are not things I was trained to do in any of my courses on writing, rhetoric, or teaching. It is as if I need to learn to compose all over again in a new language. As much as I am an experienced writer, I am a novice composer of web sites. This sort of composing is different; in many ways, it is more complex. Deciding what to say is one thing. Deciding how to say it, with all of the choices available, is another.

As I continue to work through the processes involved in completing this website, I have relied on a wide variety of resources available to me. I am fortunate to have colleagues fluent in HTML with whom I can discuss my ideas and who can help me to manipulate the code to get the results I want. Colleagues gifted in visual design help me think through the
visual impact of the website, ensuring that theme selection, color choice, layout, images, and navigation contribute positively to the site’s overall effect. Printed guidebooks (I’ve become quite familiar with the “for Dummies” series) and online information have proven valuable when a “how to” issue temporarily stymies progress, or when something just doesn’t work as it should, and there have been many of those moments. My own rhetorical training has been beneficial in making decisions related to purpose, audience, and content, as well as in thinking about the multimodal elements of the site. The processes involved in composing this website have included not only my own individual work with writing the content and selecting the images for the site, but also my engagement with an interactive network of knowledge and support, a network that has assisted me in making and enacting rhetorical decisions. Developing the site has been a collaborative experience, and, as much of the collaboration has occurred remotely, it has truly been “netWORK” (Nardi, Whittaker, & Schwarz, 2002).

The experience of designing my first website, as limited as it has been, as well as working with students on audio and video projects, has taken me well outside of my “writing comfort zone.” These experiences have highlighted for me the complexities of composing for media other than 8½ x 11” paper, and of composing in modalities other than alphabetic text, particularly when such compositions involve the use of current technologies and new media. As a composition instructor whose life’s work is teaching students to write, this has been enlightening. It has called me to question and consider what existing rhetorical knowledge and skills “map on to” the task of composing multimodally, as well as what other knowledge and skills are necessary.
I am reminded by this experience of Mary Louise Pratt’s 2002 talk at the MLA Conference (Pratt, 2002), in which she discussed the destabilization of the monolingual emphasis inherent in the MLA’s division of scholarship into English and foreign languages by the growing multilingualism in the United States. While Pratt’s talk (and its later publication in the *PMLA*) focuses specifically on linguistic issues, those of us in Rhetoric and Composition are in the midst of a similar destabilization of the singular focus on the alphabetic for “writing” and for our writing courses. Although my personal experience with different types of composing is recent, relatively speaking, this destabilization is not new within the discipline. As Takayoshi and Selfe (2007) note “It is fast becoming a commonplace that digital composing environments are challenging writing, writing instruction, and basic understandings of the different components of the rhetorical situation (writers, readers, texts) to change” (p. 1). To scholars in writing studies and rhetoric and composition, our discipline is at once both familiar and foreign.

As technologies change and shift, so, too, do our notions of what it means to write. In the words of the Writing in Digital Environments (WIDE) Research Center Collective (2005), “Writing no longer means merely words on the printed page. Today, writing means selecting among and scripting multiple media, including photographs, charts, video, images, audio, diagrams, hyperlinks, and more” (“How Should We Teach Digital Writing?”). Writing is, as claimed by Kathleen Blake Yancey (2004b), “made not only in words” (p. 297). It is multimodal.

Multimodality has deep historical roots. In fact, Gunther Kress (2010) argues that multimodality is the “normal state of human communication” (p. 1) and that “the world of
meaning has always been multimodal” (p. 174). Elizabeth Birr Moje (2009) cites Heath and Wollach, who trace the interdependence of communication modes to the Middle Ages, when illuminated manuscripts bore witness to the interplay of text and image in early written documents. Gleick (2012) shows that multimodality goes back even farther, to the beginnings of symbolic thought evidenced in cave painting. As Kress (2010) notes, many common media of communication, including road signs, blend word, image, and color to relay meaning. Increasingly, sound and video are being added. Takayoshi and Selfe (2007) point out that multimodality “has been encouraged” throughout history as evidenced by “engraving, film photography, recording devices, animation, and television” (p. 7).

Multimodality is not entirely new to the academic discipline of writing studies, either. In his historical account of multimodal pedagogy, Palmeri (2012) outlines “the vivid, multimodal scenes that flourished in our field’s past” (p. 5) and the “multimodal approaches to writing pedagogy” (p. 14) in our disciplinary history, calling specific attention to the work of Berthoff, Smitherman, Murray, Elbow, Moffet, Corbett, and Shor, as well as to the work of process researchers who “conceptualized alphabetic writing as a deeply multimodal thinking process that shares affinities with other forms of composing (visual, musical, spatial, gestural)” (p. 25).

Multimodality is an intrinsic part of communication, and is not limited to the digital realm; however, the ubiquity of digital technologies has invigorated attention to and interest in multimodality. Therefore, for this specific project, I am most interested in how students
navigate composing in digital spaces utilizing more than one semiotic mode to create a text¹. For example, how do students decide what should be shared visually as opposed to textually? How do they make decisions regarding sound? Also, how do they learn to use technology that may be unfamiliar to them but is necessary to complete the project? It is in such composing spaces and situations that students face not only complex rhetorical choices regarding modality, but they also must learn to work with and within the technologies they utilize as they compose. While I would not argue with the assertion that working with any less familiar medium poses challenges, digital technologies can prove particularly tricky, especially if the user is unfamiliar with the software or applications. Technology choice shapes the potentials for compositions and affects the final product, as does a writer’s experience and knowledge in using the technology. Further, as Kress and van Leeuwen (2001) explain, “production and distribution produce their own layers of signification” (p. 20). Because composing with digital technologies is a more complex, layered act of composing than writing an essay on a pair of pointe shoes or on a t-shirt (Shipka, 2011) (acts which, although certainly different materially, involve the more familiar action of handwriting alphabetic text with a writing implement), and because such acts of composing are more likely to serve students well in their composing situations beyond the first-year composition course, this may be the more productive and useful approach to incorporating a multimodal focus into composition classrooms. Such a focus is also more likely to address concerns about 21st century literacies and preparation for the world of work as well as concerns about bridging students’ in-school and out-of-school writing practices, while

¹ For this dissertation, “text” is defined as any communicative product.
incorporating multiple ways of knowing, acts of creativity, and complex rhetorical awareness and decision making.

In “Rethinking research on composing: Arguments for a new research agenda,” Odell and Prell (1999) wrote:

What we have needed for at least a decade, and what we must have soon, is a period of vigorous research on composing. Not just writing—composing. To modify a phrase from Richard’s Philosophy of Rhetoric (1965), we need studies not solely of ‘the interanimation of words,’ but the interanimation of words, visual images, and page (or screen) design. (p. 295)

Unfortunately, over a decade after this call, Composition Studies still lacks such a body of research. As communication increasingly becomes more digital, and allows more integration of semiotic modes, the need to study multimodal composing in digital spaces becomes more imperative. At this point, we’ve developed theories about multimodality (Kress, 2010; Rowsell, 2013; Wysocki, Johnson-Eilola, Selfe, & Sirc, 2004), we’ve composed multimodally ourselves (Sheppard, 2009; Shipka, 2011; Sorapure, 2006), we’ve assigned our students multimodal projects (Anderson, 2003; Anderson et al., 2006; Hess, 2007; Jones, 2010; Shipka, 2011), and we’ve written about why multimodality is important and belongs in the Composition classroom (Selfe, 2009; Takayoshi & Selfe, 2007; WIDE, 2005). What we have not done enough of is to study, in an empirical, “RAD” (Haswell, 2005) way, how our theories play out in praxis with student composers. We need to return to earlier process studies, and to complete similar types of research with digital, multimodal composition, research that compares the processes of novices with experienced composers, research that
examines how interaction with even more, and perhaps less familiar, technology affects composing, and how composing differently, using multiple semiotic modes rather than alphabetic text alone, changes what we know about composing processes. When environments for composing change, so, too, do composing practices (WIDE, 2005). Changed composing spaces require new tools, skills, and strategies to produce different types of texts. This requires that we adjust our approaches to teaching composition. However, we should not assume that we know, without careful examination, what specific adjustments should be made. Instead, we need to study what students do when they compose multimodally, and to compare that with what more experienced multimodal composers do. This will allow us to understand what new skills and strategies are required in order to compose effective multimodal compositions. Then we can adjust our approaches accordingly.

I have always written with my students. Frequently, I will compose a paragraph as they observe, or along with them as they offer input. I want them to see that I, too, sometimes struggle to put words together, that I change my mind about what I want to say, that I often delete more sentences than I write. I am always mindful, though, of the students’ perceptions of my writing processes and my writing ability, articulated a few semesters ago by one student who said “even as much as you work on your paragraph, we have to work even harder. We don’t have the same amount of practice you have. We can’t recognize what is good or not-so-good in our writing like you can.” Jaylan is right. The skills and strategies I may need, after decades of writing practice, are different from the skills and strategies my students may need. Our pedagogical approaches should be based on the students’ needs.
As we move to working in different composing spaces, with differently shaped products, research such as the present study is needed to determine what existing knowledge about writing processes may transfer from alphabetic writing into multimodal composing, and what about multimodal composing is entirely different. Such research is needed to develop pedagogical approaches and instructional strategies appropriate to helping our students become thoughtful, critical composers of multimodal texts. This dissertation, focused on describing what novice, student composers of multimodal text do as they compose, may begin to fill that research need.

In chapter one, I offer a review of relevant literature in the areas of multimodality, writing processes, and invention. Chapter two describes the methods utilized in conducting this study. Chapters three and four present results from observation, interviews, and written reflections of the student participants (chapter three) and from screen capture data generated by a single participant (chapter four). Chapter five presents overall analysis of the results, including a model of the multimodal writing processes that emerged from this study. I also address the limitations and implications of the study before offering conclusions.
CHAPTER ONE: REVIEW OF LITERATURE

To inform the direction of this dissertation, I draw from several areas within Rhetoric and Composition. Studying multimodal composing processes requires a foundation not only in current work in multimodality, but also in process theory and rhetorical invention.

Multimodality

Writing scholars draw on work in semiotics, literacy education, and rhetoric, to write about multimodality. Much of the scholarship focuses on: 1) Defining multimodality, 2) justifying the importance of attention to multimodality in rhetoric and composition, 3) constructing or revising theory to reflect and accommodate multiple modalities for creating meaning, 4) assessing multimodal compositions, 5) offering analysis of a multimodal work, or 6) offering narratives that outline the development of particular multimodal compositions. In the latter category, scholarship might be divided into publications focused on professional writers and publications focused on students. This section offers a discussion of the literature on multimodality that grounds and informs this dissertation.

Defining Multimodality

“Multimodality” is a slippery term with disparate interpretations of meaning. The term developed out of work in literacy, literacy pedagogy, and social semiotics (the study of signs and sign systems), originating in the work of the New London Group\(^2\) (1996), Gunther Kress (1997, 2003, 2010), and Kress and van Leeuwen (2001). In the New London Group’s

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1996 “A Pedagogy of Multiliteracies: Designing Social Futures,” multimodality is defined as the “relations between the different meaning-making processes” (“Dimensions of Meaning,” para. 2) or multiliteracies. “Multiliteracies” refers to the multiple modes of communication, including textual, auditory, visual, gestural, spatial, and behavioral modes. In semiotics, a mode is a “material resource which is used in recognizably stable ways as a means of articulating” knowledge (Kress & van Leeuwen, 2001, p. 25). Modes include the written word, still or moving image, speech, sound (music or sound effect), movement, and gesture, each mode being a different means of encoding information.

The New London Group’s “pedagogy of multiliteracies” outlines both the “what” (what students need to learn) and “how” (the pedagogy) to expand the scope of literacy from a narrow, monolingual perception to a more diverse representation that recognizes all the multimedia forms and media used in meaning making. Within this framework, a person engaged in a semiotic act utilizes “available designs,” the resources available for meaning making, such as orders of discourse, style, genre, dialects, and voice to engage in “designing.” Designing is the active and dynamic process of shaping meaning through re-presentation, re-contextualization, and/or transformation of available designs to create the “Redesigned,” the resultant meaning. In designing, a communicator may work with any of the six different modes of meaning, each with its own functional grammar. Multimodal design, then, involves the utilization of more than one mode of communication in dynamic relationship. Adding focus to the relationship between the modes, Kress and Van Leeuwen define multimodality not only as “the use of several semiotic modes in the design of a semiotic product or event,” but also “the particular way in which these modes are combined”
Different modes may be mutually reinforcing, complementary, or hierarchical (one mode is dominant, with other modes adding “emotive colour” or “realistic presence”) (2001, p. 20).

Building on the theoretical work of these scholars, Anderson et al. (2006) define multimodal compositions as “compositions that take advantage of a range of rhetorical resources—words, still and moving images, sounds, music, animation—to create meaning” (p. 59). Similarly, Takayoshi and Selfe (2007) identify multimodal texts as “texts that exceed the alphabetic and may include still and moving images, animations, color, words, music, and sound” (p. 1). Given the similarities in these definitions, multimodal composition can be defined, at its most basic, as the creation of any text involving more than one modality to relay meaning (Dunn, 2001; Kress, 2010; Shipka, 2011; Takayoshi & Selfe, 2007; Wysocki, 2004b).

Because it is the growing availability of digital tools for writing that has most lead to the increasing attention to multimodality in rhetoric and composition, some scholars (Anderson, 2003; Porter, 2003; Selfe, 2004; Takayoshi & Selfe, 2007; WIDE, 2005) argue that multimodal composition within the context of the discipline of Composition Studies should be defined with an explicit connection to digital writing and to new media. If multimodality a contested term within scholarship in the field, so too is “new media.” It is important to consider this term, as well, for its significance in some definitions of multimodality.

Manovich (2001) defines new media as those which exhibit five principles: numerical representation (composed of binary code), modularity (a fractal structure),
automation (many operations involved in its creation are automated), variability (not fixed), and cultural transcoding (understandable and recognizable to both human users and to computer systems). Others (Selfe, 2004) define new media as those created primarily in and belonging to the digital realm, a definition in line with, if not as sophisticated as, that of Manovich. More specifically, Selfe (2004) connects multimodality with “new media texts,” which she defines as “texts created primarily in digital environments, composed in multiple media (e.g. film, video, audio, among others) and designed for presentation and exchange in digital venues” (p. 43). Wysocki (2004b), however, differs greatly from most scholars in her definition, calling “‘new media texts those that have been made by composers who are aware of the range of materialities of texts and who then highlight the materiality’” (p. 15). Because Wysocki defines new media texts in terms of materiality rather than digitality, her definition opens space to consider, with any text we compose, the issues that are perhaps made more obvious to us or that demand our attention in digital work. For example, we are called to consider the placement of words on the page, the typography, the use of color, margins, and, perhaps more importantly, how the use of particular materialities become conventional and accepted while others are not, and what those accepted practices suggest and perhaps mask.

With this focus, we are called to consider our rhetorical choices, to question “how and why we make [particular] combinations of materials, not simply that we do it” (Wysocki, 2004b, p. 19).

Wysocki’s unconventional definition of “new media” is useful for what it encourages in terms of the considerations of rhetorical choice both with, and outside of, the parameters of digital media, and for what this argument brings to considerations of multimodal texts.
Given the understanding that some new media remediates previously existing media (Baron, 1999; Bolter & Grusin, 2000) it is the materiality of new media—as defined by Selfe and Manovich—that differentiates “new” media from that which preexisted it. Changes in materiality highlight not only the material affordances of new media, but call our attention to the materiality of previous media. Thus, changed materiality does cause us to focus more precisely on rhetorical choices, as Wysocki suggests, and to question convention in terms of our products for knowledge creation and distribution.

I value the focus on materiality that Wysocki’s (2004a, 2004b, 2005) scholarship adds to definitions of multimodality and to new media. I also believe that it is beneficial to consider the views of those whose definitions of multimodality do not involve either the technologies used for producing a multimodal composition, or on characteristics of the resultant product. Jody Shipka is one example. Shipka (2011) defines multimodality as a process, and asserts, following Prior (2009), that “multimodality is not some special feature of certain kinds of utterances, but a ‘routine dimension of language in use’” (Shipka, 2011, pp. 12-13 quoting Prior, 2009). Multimodality is, she claims, an elemental part of “all communicative practice” (p. 13). Such a definition aligns with process-oriented emphases on multimodality within the history of the discipline, highlighted by Palmeri (2012), and opens a space to reconsider and rethink process (or post process, or post-post process) theory to address “the multimodal, technologically mediated aspects” (Shipka, 2011, p. 13) of communication, as well as to consider potential interdisciplinary interaction as the emphasis of composition courses expands to include means of representing knowledge that extend beyond alphabetic text.
I understand the resistance of some scholars to define multimodality within the realm of the digital. Ultimately, my own broad notions of multimodality align with these scholars, as well as with the work of Dunn (2001). I believe that multimodality is an innate part of the communication process. I have watched my own son draw pictures and diagrams to share ideas (Kress, 1997) without thinking about his means of communication, and few of us consistently, consciously consider our use of gesture, facial expression, or tone, all of which affect the interpretations of our speech. Where multimodality is, at times, made unnatural is in the composition course, due it its historical focus on alphabetic text, and in other disciplines, due to their specific foci. Rather than viewing communication as a whole (Shipka, 2011), and the varying modes as interrelated, we have bracketed off speech, drawing, sound, and writing, to make these activities more manageable to study, research, and teach, and to allow specialization (Kress, 2010). Such separations are uneasy, as the making of meaning is often synaesthetic.

Although I acknowledge that multimodal texts are not exclusively produced and distributed through digital media, and I agree that multimodality should not be defined solely in terms of a final product or resultant text (Dunn, 2001; Shipka, 2011), I assert that the increased access and the regularity with which digital tools are being utilized for composing suggests the digital realm as an appropriate site for studying and theorizing about multimodal work. Given that the increased attention to multimodality has arisen largely as a result of advances in computer technologies as well as concerns over the disconnection between “in school” writing and “outside of school” writing (in part an effect of advancing technology)
and the continuing relevancy of composition courses, it makes sense in the current context to think about multimodal composition in terms of its relationship with digital technologies.

**Legitimizing Multimodal Means of Communication**

Increased access to (digital) technologies of production has changed the power dynamics in communication. These technological changes are enmeshed in a network of social, economic, and cultural changes that profoundly affect the way we communicate. Both Wysocki (2005) and Kress (2010) discuss communication practices as historically situated. Wysocki (2005) argues that our particular uses of communication materials are “unseparable [sic] from place and time” (p. 56); social, historical, economic, political, and technological contexts define the “acceptable” means for disseminating meaning. Similarly, Kress (2010) states that communication choices are “mediated by the interests of members of social groups so that practices, resources, and technologies of communication respond, at different rates at different times, to social, economic, and technological developments” (p. 19). Though our various semiotic resources experience regularity of use based on tradition, convention, or “officialdom” (Kress, 2010, p. 2), those uses are not fixed and unquestionable (Wysocki, 2005). Alphabetic text has long been the “accepted” means of creating and communicating scholarly knowledge, and alphabetic text, therefore, has been emphasized in our composition classes. We have been conditioned to believe that words are serious, and images are not serious (Wysocki, 2004b). However, there is nothing inherent in white 8 ½ x 11-inch white paper and black serif font that suggests intellectuality; this has simply been the accepted social practice. Wysocki (2005) offers a useful analogy:
You have assigned a research paper in a graduate class you teach. Under what conditions would you accept a paper handwritten in crayon on colored construction paper? If you can imagine no conditions whatsoever, then for you color of paper and technologies of print typography are like water or stones: things whose natural properties (seem to) necessarily constrain how we can use them. We do not attempt to make soup from stones, nor do we imagine early hominids attacking mammoths by throwing water at them. If paper and typography are similar in having such inherent constraints, then it is the neat rows of typographically clean letters on letter-size white paper that are necessary for serious thought. But. My claims about the limitations of water, at least, are incorrect, for we can and do use water as a weapon. (p. 55).

Wysocki goes on to explain how the “acceptable” uses of particular materials—water or letter-size white paper—are socialized, and determined by context. Water, not often considered as a weapon, was used as one in the Civil Rights Movement. Wysocki urges us to question how various communication materials might be utilized differently. We must, she argues, learn to consider other potentialities, potentialities that “have been rendered unavailable by naturalized, unquestioned practice” (Wysocki, 2005, p. 57).

Kress (2010) argues that the relationship between the government and the economy is one important factor that determines the appropriate or legitimate means of communication. Shifts in that relationship have led to shifts in the media-audience relationship. Kress observes that in previous, state-controlled markets, there was an interest in developing and maintaining a socially cohesive, homogeneous work force of “citizens”—“social subjects whose identity was shaped by the goals of the state” (p. 19)—who adhered to traditional
forms of knowledge dissemination. Currently, the global market fosters fragmentation, distinct lifestyle choices, and more fluid, mobile communication practices, in which the favored subjectivity of individuals emphasizes choice and less social cohesion. One result of reduced social cohesion is reduced uniformity in the notion of what constitutes a text, and how we define such terms as “authorship” (Kress, 2010). User-created content reflects a “redistribution of power in communication” with “profound” effects on “conceptions of learning [and] of knowledge” (Kress, 2010, p. 21).

The proliferation of and access to new media tools (both a cause and an effect of changing social, economic, political, and technological conditions) has led to this upsurge in attention to multiple modes for creating meaning. As Moje (2009) asserts, visual, aural, and embodied/performed means of communication are being newly recognized as legitimate means for learning, communicating meaning and disseminating information (see also Kress, 2010; Shipka, 2011). As noted by Kress and van Leeuwen (2001), prior to the advances in digital technologies, different modes of relaying meaning were generated in hierarchical levels by “specialists in charge of the different modes” (p. 2) brought together only through editing. While the resulting composition (a film, for example) might be multimodal, in the development of the text each mode was composed separately. More currently, technological advances allow the development of multimodal texts by “one multi-skilled person, using one interface, one mode of manipulation, so that he or she can ask, at every point: ‘Shall I express this with sound or music?’, ‘Shall I say this visually or verbally?’, and so on” (Kress & van Leeuwen, 2001, p. 2). As a result, there is a burgeoning interest in theory and practical application that offer a unified approach to the various modes of meaning making.
Increased access to methods of production and delivery is making it possible for students to produce, not solely consume, digital text. Student writers are now, at a level heretofore unreachable, able to compose texts that move well beyond linearly structured paragraphs formed of sentences formed of words. Anderson (2003) argues that students have the opportunity to become “prosumers”—a “mashup” or an amalgamation of the terms “producer” and “consumer”—reflecting the affordances we now have for not only consuming, but also creating new media texts as a result of the “convergence of professional and consumer level equipment and software” Anderson (2003) available. Lister, Dovey, Giddings, Grant, and Kelly (2003) define prosumer technologies as those “that are aimed at neither the professional nor the amateur consumer market but both—technologies that enable the user to be both consumer and producer” (p. 33). Such equipment and software allow those who are not media professionals (students and their instructors, for example) to create texts that in the past only professionals with access to expensive equipment would have been capable of creating. While Lister et al. (2003) identify the personal computer as the “ultimate figure of media ‘prosumer’ technology” (p. 34), Anderson (2003) calls specific attention to the potential for creating digital video given the low cost video equipment and easy-to-learn video editing software available.

The changed spaces for writing (inclusive of the means of production and delivery) mean that the traditional practices and principles based on print culture and print views of writing are now changing, and our scholarship and pedagogy need to accommodate and address these changes. The WIDE Collective (WIDE, 2005) states “from a rhetorical
viewpoint, writing concerns not only the words on the page (the product) but also concerns the means and mechanisms for production (…); mechanisms for distribution or delivery; invention, exploration, research, methodology, and inquiry procedures; as well as questions of audience, persuasiveness, and impact” (“A Rhetorical View of Writing”). While this is also true for writing in print media, as the medium changes, this changes, as well. The current means for production are largely digital, and that allows for easier incorporation of multiple modalities. Composing multimodal text is different, as different modes have different ways of making meaning (Fortune, 2005; Hull & Nelson, 2005; Kress, 2010; Rowsell, 2013), and we need to help students navigate the differences and make effective choices in utilizing all of the available means.

Many scholars argue for a rhetorical approach to multimodality (Kress, 2010; J. Murray, 2009; Rowsell, 2013; Shipka, 2011; Takayoshi & Selfe, 2007; WIDE, 2005; Yancey, 2004b), making composition a natural disciplinary home for theorizing, researching, and developing pedagogy related to multimodality. A rhetorical approach to communication has long been the purview of Composition Studies. Kress (2010) argues that because communication practices are now more fluid and offer more choice, it is even more imperative that students are rhetorically aware. He points out that

the absence of secure frames requires of each participant in an interaction that they assess, on each occasion, the environment, the social relations which obtain in it and the resources available for shaping the communicational encounter […]. Given the presence of modal choice in representation in a multimodal world of communication
and a social world where choice is demanded and the instability of the environment of communication, a rhetorical approach is essential. (Kress, 2010, p. 26)

Borton and Huot (2007) agree, as do Takayoshi and Selfe (2007). Following Sirc, Borton and Huot (2007) define “composing” as “the rhetorically informed process of producing texts appropriate for a specific purpose and audience” (p. 99) and they argue that this rhetorically based understanding of composition should inform discussions of multimodality and multimodal composing. Takayoshi and Selfe (2007) argue that not only is multimodality “one pathway to accomplishing long-valued pedagogical goals” (p. 5) of composition, but also “opportunities to think and compose multimodally can help us develop an increasingly complex and accurate understanding of writing, composition instruction, and text” (p. 6).

Many scholars argue that to continue to emphasize a dominance of alphabetic text is to ensure that our discipline is out dated and our pedagogy out of touch with the needs of our students (Selfe, 1999; Takayoshi & Selfe, 2007; Yancey, 2004b). Cynthia Selfe is perhaps the loudest voice in this conversation, arguing as early as 1999 that Composition Studies scholars must “pay attention” to changing communication technologies and the implications of those technologies for our work. In 2004, Selfe stressed that “if our profession continues to focus solely on teaching only alphabetic composition—either online or in print—we run the risk of making Composition Studies increasingly irrelevant to students engaging in contemporary practices of communicating” (p. 72). To adequately fulfill our mission to our students, to prepare them to fully participate not only functionally, but also critically and rhetorically in society (Selber, 2004), those of us in the discipline of Composition Studies must give focused attention to multimodality and digital technologies.
Theoretical Perspectives

In many ways, the work of Gunther Kress (1997, 2003, 2005, 2010) offers the most developed body of work in multimodal theory, and his contributions have provided a vocabulary for discussing multimodal meaning making and the rhetorical choice of mode. Further, and particularly significant for this dissertation, Kress’s theoretical work on the strata of discourse, design, production, and distribution offers a starting point for discussing the processes of multimodal composing.

The work of Kress (both alone and with Van Leeuwen) reflects a focus on a multiplicity of semiotic modes and their logics as the defining feature of a multimodal composition. Kress (2003) argues that in a given communication situation, modal choices are made based on the fixed meaning potentials of modes, including questions about what can be achieved by a specific mode given its limitations and affordances, as well as on the social and cultural context that “regularize” the use of modes and define their functional specialization and appropriateness. In other words, these choices are based both on the current social and conventional uses of a mode and whether or not a given mode can adequately represent that which the communicator wishes to convey. Good decision-making about particular modes is based on the principle of aptness, or “fitness for purpose,” as in “this is the best fit (the most apt) for this purpose” (Kress, 2010, p. 156).

According to Kress, modes have “specific potentials for representation” (Kress, 2003, p. 45) based on their materiality. Different modes have different potentials. For example, alphabetic writing involves words and sentences, organized according to rules of grammar and syntax, as well as font, spacing, size, and color. The resources of sound include pitch,
rhythm, accent, volume, and tone. (According to Kress, sound is a materiality, not a mode. Modes of sound include music, speech, ambient sounds, sound effects, and so forth.) Whereas bolding, italics or a change in font size or color might be used for emphasis in alphabetic text, loudness, accenting, or changes in pitch might be used in modes of sound. The materiality of a mode affects how a mode is produced (connecting to the strata of production) and received in terms of both the sensory channels involved and its affective affordances. He argues that any theory of meaning making must take this “bodilyness” (Kress, 2003, p. 46) of modes into account. In his 2010 work, Kress (2010) broadens his focus on materiality, noting that a material focus makes it possible to link the means for representation with the bodyliness of humans: not only in the physiology of sound and hearing, of sight and seeing, of touch and feeling, of taste and tasting, but also in the fact that humans make meaning through all these means and the fact that all these are linked and make meaning together. Beyond that, the focus on materiality offers the possibility of seeing meaning as embodied. (p. 83)

Modes, according to Kress (2003, 2010) are either temporal (following the logic of time) or spatial (following the logic of space) based on their materiality. In time-based modes, Kress (2010) suggests, elements are ordered sequentially in time, while in space-based modes, elements are simultaneously present and organized in relation to one another. In some of his work, Kress acknowledges that a few modes (he specifically mentions gesture, writing, and moving image) participate in both the logics of space and time. In his 2003 Literacy in the New Media Age, he notes that writing relies heavily on the “temporality of speech” (p.46),
but it is spatial in terms of the presentation of the words on a page. In 2010, Kress repeats this assertion in his latest work, *Multimodality: A Social Semiotic Approach to Communication*. Here, he argues “writing is not dominantly and finally organized by the logic of space; as readers we are bound both by the orderings of syntax and the directionality of the line” (p.81). While Kress argues that single modes generally have a singular space or time logic, he notes “Mixed logics are, above all, a feature of multimodal texts” (Kress & van Leeuwen, 2001, p. 46). Kress (2003) argues that a theory of meaning for multimodality must account for these mixed logics, and to address this, Kress offers the concept of *design*.

Kress first introduces his concept of design in his 2001 publication with Van Leeuwen titled *Multimodal Discourse: The Modes and Media of Contemporary Communication*. Design is a part of a stratified system with four domains of practice or *strata*—discourse, design, production, and distribution—across which meanings are made. Whereas discourses “are socially constructed knowledges of (some aspect of) reality” (p. 4), designs realize those discourses for a particular rhetorical situation. Production and distribution are, at one level, the material realizations of design, but are more than *mere* realizations, as these strata “produce their own layers of signification” and have their own meaning potential (Kress & van Leeuwen, 2001, p. 20). Designs involve “(uses of) semiotic resources, in all semiotic modes and combinations of semiotic modes” (p.5). Design establishes the “organisation [sic] of what is to be articulated” (p. 50), involving issues of modal choice and arrangement. Taking up the concept of design in 2003, Kress states “design asks ‘what is needed now, in this one situation, with this configuration of purposes, aims audiences, and with these resources, and given my interests in this situation?” (p. 49),
emphasizing the importance of context and rhetorical situation in modal choice and arrangement. Extending this discussion in 2010, Kress notes “rhetorical processes underlie, precede, and then become design processes” (p. 121).

Although Kress’s work emphasizes semiotic modes, other theories have emerged foregrounding issues of materiality, ecology, rhetoric, and complexity in relation to multimodality. In examining multimodal composing processes, it is important to consider the influence of each of these issues composing. In *Embodied Literacies: Imageword and a Poetics of Teaching*, Kristie Fleckenstein (2003) argues for a poetics (a term she defines as a systematic exploration and explanation) of meaning that recognizes meaning as “an ecology in which the mutually constitutive logics of imagery and language complement and clash in a writhing network of reciprocal loops” (p. 7). For Fleckenstein, *imagery* is “the incarnation of meaning in various modes and modalities” (p. 2). Imagery is, therefore, inherently multimodal. Imagery works in concert with language in a “double dialectic” (p.4) as *imageword*, irrevocably linked in an ecological and mutually constitutive creation of meaning. Further, imagery is not an object, instead it is a process. Drawing on scholars such as Aristotle, neuroscientist Antonio Damasio, and philosopher Suzanne Langer, Fleckenstein argues for imagery as foundational to thought and to the development of meaning. Therefore, if we hope to understand meaning-making, we must study multimodality as an important facet of literacy. Literacies evolve through bodies, cultures, places, and times and “resolve into three embodied literacies” (p. 76): somatic, “how we construct and participate in the world through our bodies and how we know the world as bodies positioned in specific sites” (p. 79); polyscopic “how we deploy specific ways of seeing and how we organize our
realities, including our textual realities, according to specific networks of reinforcing images” (p.83); and lateral “how we evolve and organize narratives faceted by time and space” (p.87). Meaning making is, therefore, embodied within a body that works within an ecological network of places, spaces, and times. It is multisensory, and therefore multimodal.

Wysocki also takes up the issue of embodiment, but concentrates solidly on the connections between embodiment and materiality. In her 2012 introduction to composing (media) = composing (embodiment) (Arola & Wysocki, 2012), she questions “what might be possible if we encouraged a democracy of the senses in our teaching instead of a hegemony of sight?” (p. 7) and asks us to consider “writing’s particular and varying embodying possibilities” (p.8). Given our current technologies, we are in a position to make more “thoughtful decisions” (Wysocki, 2004b, p. 11) and adopt “mindful textual practices” (Wysocki, 2004b, p. 19) with attention to how and why we combine various materials in our compositions and what values those texts embody. In her 2004 “Opening New Media to Writing: Openings and Justifications,” she encourages the composition of “arguments that use photographs or drawings instead of words” (Wysocki, 2004b, p. 16) and the experimentation with text manipulation in a way that encourages looking both “at” and “through” the text, as described by Richard Lanham (1993). Further, she argues against Kress who distinguishes modes from media that “our media really are modes” (Wysocki, 2004b, p. 13). Kress’s separation of mode and media, she claims, suggests that media contribute nothing to the meaning of a text, and she responds by stating “I disagree—the material stuff of our texts may sometimes seem not open to individual choice . . . but that means the choice has already been made for us” (p.14). Thus, for Wysocki, the materiality of a text is as
important in the creation of meaning as mode. Form, the materiality of a text and the shape
the text takes on within that materiality, cannot be separated from content. Issues of
appropriateness and effectiveness in the relationship between form and content become
increasingly significant when more material and modal choices are possible.

Kathleen Yancey’s approach involves issues of complexity and arrangement,
focusing not on individual modes but on their assemblage. In “Looking for Sources of
Coherence in a Fragmented World,” Yancey (2004a) draws on Cynthia Selfe’s work on
layered literacies to explain that literacies have become “textured,” overlapping, and
intertextual (p. 89). To understand these literacies and their complexities in the digital realm,
we must focus on their work within a composition, and find the patterns that lend coherence,
and therefore meaning, to the text. From a rhetorical standpoint, coherence, “a defining
feature of composition,” she argues, “is all about relationships” (p. 90). She draws on the
notion of relationships to define composition in her CCCC Chair’s address (2004b), stating:

A composition is an expression of relationships—between parts and parts, between
parts and whole, between the visual and the verbal, between text and context, between
reader and composer, between what is intended and what is unpacked, between hope
and realization. And, ultimately, between human beings. (p.100)

These relationships become more complex in multimodal, digital work, as there are multiple
ways to create meaning. To further explain her position, Yancey focuses on the creation of
meaning as analogous to weaving a tapestry: “Digital compositions weave words and context
and images: They are exercises in ordered complexity—and complex in some different ways
than print precisely because they include more kinds of threads” (Yancey, 2004a, p. 95).
Here, Yancey emphasizes not only the multiplicity of multimodality, but also the role of the composer as one who arranges the various aspects or multiple “threads” of meaning to create a coherent whole. It is the arrangement, the particular patterns generated by the “weaving” of the various threads, that is important. There is no mention of the work of individual modes beyond what they contribute to the whole. It is not the affordances, limitations or meaning potentials of the individual “threads” that matter. Instead, she suggests that composers ask of themselves “what arrangements are possible?” (p. 96) and how the chosen arrangement realizes the intention of the piece.

Arguing that scholars in Rhetoric and Composition need more than “this moment” (Yancey, 2004b) to justify a focus on multimodality, Jody Murray (2009) draws on the disciplines of philosophy, rhetorical theory, neuroscience, and composition theory to argue for attention to non-discursive modes of making-meaning and to theorize about multimodal composing. Citing scholars such as Bakhtin, Vygotsky, and, like Fleckenstein, Langer and Damasio, Murray traces connections between composition and symbolization, affect and emotion, the imagination, and cognition to ground his theories of non-discursive rhetoric and multimodality. Murray argues that non-discursive rhetoric—a rhetoric focused on non-alphabetic symbol systems and non-discursive forms of meaning-making—“provides us a way to talk about rhetoric as it is experienced in many multiple and layered textual modes and media” (2009, p. 2). Non-discursive rhetoric relies on imagery (both mental images and the broader sensory definition), which, he argues, is the “building block of language and consciousness, of emotions and reason, and of thought and imagination (p. 128). Further, it is
“free of ordering,” often “happens at once,” and it expresses that which cannot be expressed in words (p. 4).

Based on his work with non-discursive rhetoric, Murray (2009) posits five qualities of multimodality that offer a theoretical base for incorporating multimodal work into composition classes. The first of these qualities is image, which Murray argues is central to thinking and therefore to producing text. Specifically, he argues that students need to be taught how images are rhetorically invented. The second quality is that of unity. Murray argues that just as unity is important in alphabetic text, it is important in multimodal text. Unity is audience and purpose specific, and is achieved by ensuring the various elements of a text are in dialogue, as well as through repetition, visual proximity and similarity, use of color, and theme. The third quality is layering. Murray’s concept of layering connects specifically with Yancey’s (2004a) notion of complexity. The layers within a multimodal text create tension and resolution. The fourth quality is juxtaposition. Juxtaposition, defined by Murray as the dialogue between different types of text (different modes), can, like layering, create tension and resolution by adding to the complexity of a composition, or may simply add nuance. The fifth and final quality is perspective, defined as the “architecture of space” or the creation of a vantage point or point of view for the composition (J. Murray, 2009, p. 180). Murray argues that “multimodal texts [. . .] must construct a world in which the reader can reside” (J. Murray, 2009, p. 181). Although the distinctions between these qualities (particularly layering and juxtaposition) are blurry, they are useful for considering not only the differences, but also the similarities, in non-discursive, discursive, and
multimodal forms of communication. These qualities may also be useful in developing methods for assessing multimodal compositions.

Shipka’s (2011) conceptualization of multimodality as a practice, not as a product, affects her theoretical frame and offers another perspective for studying multimodal composing practices. Labeling texts or artifacts as multimodal, Shipka argues, “limit[s] potentials for considering the scope, complexity, and pervasiveness of multimodal practice” (p. 12). She asserts that we must take notice of the varying modes involved in the processes of development and production, not only those modes evidenced in the resultant product. Her framework for composing “resists attempts to bracket off individual senses and deployment of select semiotic resources” (p. 86); instead, she argues for attention to the “blended” (p.65) aspects of all communication practice. This notion of blending connects with Yancey’s concept of “weaving,” but has a more organic sensibility. Semiotic mode is one of many tools that mediate composing, including the material, technological, and textual resources involved in the communication act as well as the influences of social interaction, embodied activity, aspects of space and time, and cultural tools. Rather than focusing on individual mode, a more appropriate focus privileges nuanced rhetorical awareness and rhetorical sensitivity through “purposeful choosing, adaptation, and material flexibility” (p. 89). Of course, this is what makes assessing the quality of a multimodal composition such a vexing task.

*Developing Multimodal Compositions*

Another branch of work on multimodality traces the development of specific multimodal compositions. This body of work focuses both on professionals and on students,
and is important to a study of multimodal composing processes in the descriptions that it offers of how such compositions develop and evolve. Research on professionals reports the work of individuals in various fields as well as academic researchers who compose multimodally themselves (Sheppard, 2009). The growing body of research examining the multimodal composing processes of professionals can be useful in discerning differences in the processes of less skilled composers (such as the participants in this study) just as early process research compared the processes of skilled and less-skilled writers (Pianko, 1979). Jennifer Sheppard (2009) discusses the challenges she faced as she developed a website directed at children for the Forest Service Research Lab. She argues that although individuals outside of the fields of composition or professional communication view multimedia production as a matter of technical “know how,” composing in a multimodal space involves much more. Underlying the technical concerns are decisions that impact the effect of a text on its audience, including more traditional rhetorical issues (audience, purpose, context) as well as rhetorical choices specific to multimodal composing. Content, the affordances of various media and modalities, concerns over access, and the technological capabilities of the intended audience all must be weighed and considered. Pointing out the complexities of such decision making, Sheppard states

the production of multimedia is far richer in the ways it shapes meaning than casual observers (including students, colleagues from outside the computers and composition discipline, and administrators) might see. Multimedia production practices are a sophisticated integration of knowing how and when to use appropriate technologies, where to find or how to create the necessary media resources, how to
interact with the people involved with a project, and how to prepare the material for the context in which it will be used by its intended audience. Each aspect of this practice is a matter of negotiation, one in which the designer must make decisions that will ultimately impact the meaning and reception of a multimedia text. These are not neutral, value-free skills but rather rhetorical practices in which the choices writers/designers make have consequences. (p.130)

As Sheppard makes clear, there is more involved in multimedia and multimodal composing than simply transferring the practices of essayistic literacy and rhetorical skill into different media. Although some of the stumbling blocks discussed by Sheppard are not issues that students would confront in the classroom setting (such as negotiating with her client) other issues and complexities she presents may well translate into pedagogical practices to help students learn to compose rhetorically in multiple modes and media.

Student-focused scholarship on multimodal composing primarily discusses the assignments and their successes (or failures), resources for instructors considering multimodal assignments, and the ways these assignments “remEDIATE” established genres for student work in rhetoric and composition or respect different ways of knowing (Anderson, 2003; Dunn, 2001; Selfe, 2009; Shipka, 2011; Sorapure; Takayoshi & Selfe, 2007; Wysocki et al., 2004). A few publications, for example Hull and Nelson (2005), analyze completed student-generated multimodal compositions. Focusing on the assignments, however, or on the completed texts, offers an incomplete picture of what it means to compose multimodally. Such work does not address the processes involved, the ecologies at work, and the ways in
which students navigate the complexities of multimodal composition. To address this gap, it is necessary to examine work on writing processes.

**Writing Processes**

An overview of the literature from the process movement through post-process and post-post processes theories helps not only to establish the relevance and significance of this study for our discipline at present but also to ground this work in early scholarship that included acknowledgement of multimodality. Further, such an overview makes obvious that shifts from process to post-process and beyond do not represent a “break” or turn from process theories, but, rather, evidence a broadened focus of what is considered part of a composer’s process.

*An Overview of Process Scholarship*

In his 1999 “Toward a Post-Process Composition: Abandoning the Rhetoric Assertion,” Gary Olson (1999) points out the benefits of the process movement in rhetoric and composition. Early studies of writing as a process reveal significant information about invention and revision, differences between “skilled,” “unskilled,” and other types of writers (Berkenkotter, 1983; Emig, 1971; Faigley & Witte, 1981; Graves, 1975; Perl, 1979; Pianko, 1979; Sommers, 1980), the use of source material and the effect of reading fluency on writing (Kennedy, 1985), differences in one- versus multi-draft writers (Harris, 1989) and the effect of changing technologies on writing (Haas, 1989). This scholarship demonstrates researchers grappling with what it means to write, and how writing is conceived of and developed by a writer, all focused, as stated by Irene Clark (2003), “on how people write and learn to write” (p. 5). The interest in writing as a verb, an *activity*, rather than a noun, a
product, and the understanding that the activities involved in writing are recursive, rather than linearly organized, are cited among the largest contributions of this research to the field.

As Hairston (1982) and others note, the shift to a focus on process from what is referred to as current-traditional rhetoric, with its emphasis on the product, its concern with style, and the notion that topic generation and development occurs prior to writing, was a welcomed change. Hairston suggests that several things led to the “paradigm” shift, including the 1966 Dartmouth Conference, which highlighted the differences in writing instruction between the US and in the UK. In the US, writing was largely taught as a subject to be mastered, while in the UK more focus was placed on the development of the writer (Clark, 2003). The work of Murray (1972) and Elbow (1973), with their emphasis on the student as an individual and insistence that topics for writing be personal and selected by the student, reflects the influence of this conference. Other dynamics involved in the shift included the changing population of college students due, in part, to open-enrollment policies (leading to the publication of Shaughnessy’s Errors and Expectations), increased pressure for accountability, and the growing sense that it is impossible to discern what went “wrong” in a less successful piece of writing simply by examining the product, a truth captured in Murray’s analogy “process cannot be inferred from product any more than a pig can be inferred from a sausage” (qtd. in Kennedy, 1985, p. 434).

As welcomed as it was, process research was not without its flaws. As Perl (1979) states, some of this research indicates that there are “regularities in composing behavior across individuals” that suggest “the composing process is [...] amenable to a replicable and graphic mode of representation as a sequence of codable behaviors” (p. 58). The suggestion
that writing can be produced by following a flow-chart (as seen in the work of Flower & Hayes), and that choices made by writers can be “codified” drew the criticism of post-process theorists, who claim, as does Olson (1999), that process theorists were attempting to construct a “master theory” of writing. This critique of process scholarship led to changes in process research and to theories termed post-process and post-post-process.

Journet’s (2011) Burkean analysis of the narratives in research articles from Research in the Teaching of English—one process article, one post-process article, and one post-post-process article—suggests that what is taking place in the move away from process theory can be characterized as a broadening of focus. Perl’s process study (“The Composing Processes of Unskilled College Writers,” 1979) focuses on the writer as agent, but does not include marked attention to his or her individual characteristics and is instead attentive primarily to his or her action. McCarthy and Fishman’s postprocess narrative (“Boundary Conversations,” 1991) offers more emphasis on the individual characteristics of the agents than did Perl, and includes attention to scene, “describing writers and their acts largely in relation to the social context in which writing occurs” (Journet, 2011, p.43). Hull and Katz’s 2006 “Crafting the Agentive Self” involves yet another broadening, describing not only the agents, their acts, and the scene, but also agency, including discussion of “how writers’ capacity for purposive action is enabled in part by the technology they use” (Journet, 2011, p.43). This expansion of attention from writer and act alone (Perl), through attention to writer, act, cultural context, historical context, and material circumstances (McCarthy and Fishman), to a focus on “all of the above” plus agency in a discussion of “tools, resources, relationships, and cultural artifacts” (Hull and Katz, 2006, qtd. in Journet, 2011) is useful as a description of
the shifting focus in the move from process to post-postprocess, or beyond post-process. Dobrin sees the distinction between process, post-process, and post-postprocess as a shift from the “process by which the individual writer produces a text to the larger forces that affect the writer and of which that writer is a part” (cited in Fulkerson, 2001, p. 108). Dobrin’s view offers a sense of coherence within the variety of approaches identified as post-process and post-post-process. Among these approaches are foci on writing ecologies, activity theory, genre theory and genre systems, Writing Across the Curriculum, Writing in the Disciplines, and Writing about Writing.

Marilyn Cooper’s work offers an example of the writing ecologies approach. Cooper (1986) asserts that writing is not produced in isolation, but is instead “an activity through which a person is continually engaged with a variety of socially constituted systems” (p. 367); it is, in fact, “ecological,” emerging from specific environments. The ecological model Cooper proposes moves beyond contextual models, encompassing not only the writer and her immediate writing context, but instead involving many “dynamic interlocking systems which structure the social activity of writing” (p. 368). Cooper outlines six of these systems, including the system of ideas, which suggests “ideas result from contact” (p. 369), contact that can involve observation, experience, face-to-face engagement, or contact with ideas from texts. Other systems discussed are the system of purposes, the system of interpersonal interactions, the system of cultural norms, and the system of textual forms. These systems mesh together in a sort of web that “constitutes the activity of writing” (p. 372), and changes in any one system impacts the whole. Cooper’s work incorporates consideration of the “larger forces that affect a writer and of which that writer is a part,” and therefore is in line
with Dobrin’s perspective. (This, of course, only makes sense, as Dobrin has also written within the ecological approach.)

The work of Prior and Shipka (2003) is representative of the activity theory approach to understanding textual production, which situates textual production within the context and the activities that led to the text. Drawing on Bakhtin’s work on chronotopes, Prior and Shipka discuss the “chronotopically laminated” nature of writers’ processes, which they define as complex and dispersed, “multimotivational and multi-mediated,” and involving “chains of invention” (2003, n.p.). They note that writers’ processes involve “multiple streams of activity” that are mediated by texts as well as by a myriad of other tools, including, for example, the buzzer of a dryer that served as an external aid to invention and memory in one of their case studies. Studying the complexity of textual production, then, requires attention to activities and their motives, actions and their conscious goals, and operations with their unconscious goals, as well as all of the mediating texts and tools that are involved in those actions, activities, and operations.

As Prior (2004) states, and as is reflected in the various approaches collectively referenced as post-process and post-post-process, “writing is not about learning and applying formulas for making fixed kinds of texts, but about ways of working—ways of acting—that align writers, readers, texts, and contexts” (p. 167). The broadening trend (or expanded focus) in research, a trend supported in the work of Dobrin, Russell, Cooper, Prior and Shipka, as well as others who examine the complex relationships between writer, act, context, material circumstance, and agency as well as the activity of writing, highlight the continued significance of process research in a “field in motion” (Yood, 2005, p. 20). These
complex relationships are even more compelling in a multimodal environment that offers writers more possibilities and more choices for ways of working and processes for the invention, production, and delivery of texts. As Shipka (2011) argues, following Wysocki, “what is crucial is that students leave their courses exhibiting a more nuanced awareness of the various choices they make, or even fail to make, through the process of producing a text and to carefully consider the effect those choices have on others” (p. 85). A study of how students navigate these choices, and their processes of decision-making, in the broadening media available for composition is needed to inform future pedagogy.

According to Prior (2004), attention to writing processes has waned in recent years. This is largely due to the perception (of some) that process research attempts to define a rigid, always useful, lockstep method for the production of writing, or the belief that we have exhausted the potential for continued research to offer any new insight (Dobrin, Rice, & Vastola, 2011; Kent, 1999; Prior, 2004). However, it is the narrow focus of inquiry within Composition Studies on “the independent subject and the [traditional, print-based] texts that subject produces” (Dobrin et al., 2011, p. 13) that has led to this view. Prior (2004) calls attention to research that does not adequately account for the complexities in textual production, an issue addressed by Shipka (2011). Shipka claims “that theoretical, methodological, and pedagogical frameworks that fail to trace the complex ways that texts come to be . . . cannot help but fail to illuminate the roles other texts, talk, people, perceptions, semiotic resources, technologies, motives, activities, and institutions play in the production” of texts (Shipka, 2011, p. 13). The complexities of the processes of new media textual production, particularly the processes of students with varying technological
experience, continue to be under-researched and under-theorized. This study moves beyond the notion of the exhausted potential of process studies through a broadened focus on multimodal composition and the contextual and technological forces that mediate such composition. By studying student writers-at-work, writers who are making rhetorical choices and composing multimodality, writers whose work is “mediated by complex networks of tools” (D. Russell, 2002, p. 66), I hope to contribute to the conversation on the complexities of that production.

Representations of Multimodality in Process Scholarship

In re-examining the scholarship of the process movement and its relevance to the current study, it is important to note the attention given to multimodality, particularly in the work of process scholars who focus on the thinking processes involved in writing and the relationship with other creative acts. In his historical account of multimodal pedagogy, Palmeri (2012) calls attention to the work of process researchers who “conceptualized alphabetic writing as a deeply multimodal thinking process that shares affinities with other forms of composing (visual, musical, spatial, gestural)” (p. 25) as well as to other creative processes.

In The Composing Processes of Twelfth Graders, considered a foundational text in the process movement, Janet Emig (1971) clearly aligns composing, which she defines as “the selection and ordering of elements” (p. 66), with other creative activities and notes that writing “can be regarded as a species of creative behavior” (p. 17). Although the case studies she reports include little acknowledgment of multimodality beyond speaking and writing at any point in the students’ composing processes, Emig explicitly expresses disapproval with
the fact that writing instruction is monomodal, focusing exclusively on “extensive” written text, which she describes as “other-directed and other-centered” (p. 97). Further, she chides secondary school teachers for failing to engage in creative activities such as painting, singing, or sculpting that might help them more fully understand the creative process, a process, she argues, that these teachers “underconceptualize and oversimplify” (p. 98) because of their lack of such experience. In the concluding paragraphs of the monograph, Emig forecasts current conditions in composition when she suggests “perhaps teachers will abandon the unimodal approach to writing and show far greater generosity in the width of writing invitations they extend to all students” (p. 100).

Ann E. Berthoff (1981, 1988), too, sees affinities between writing and other creative acts. In her textbook *Forming, Thinking, Writing*, originally published in 1978 and released in a second edition in 1988, Berthoff makes comparisons between writing and woodworking, writing and drawing, writing and sculpting, and writing and painting. Following rhetorician I.A. Richards, Berthoff’s work on process focuses on how we make meaning and how texts are constructed. Defining a composition as “a bundle of parts” (1988, p. 23) and the composing process as “a continuum of forming” (1988, p. 21) that occurs through actions of naming, gathering, shaping, sensing and articulating relationships, interpreting concepts, and ordering, she asserts that “explanations of how compositions get made—whether they are of clay or marble, words or gestures, tones or lines—try to account for the origins and beginnings of finding some way of representing the dialectic” (1988, p. 83) between form and chaos. For Berthoff, writing, then, is one way of making meaning, one symbol system among many, and she encourages students to embrace other symbol systems as they develop
awareness of their perceptions. In *The Making of Meaning: Metaphors, Models, and Maxims for Writing Teachers* (1981), Berthoff echoes Emig’s assertions that writing instructors should explore other creative acts by discussing how much writing teachers might learn from practitioners engaged in other creative endeavors. She notes:

> From craftsmen we can learn something about the relationship of pattern and design to forming; from artists we can learn even more fundamental truths about forming—that you don’t begin at the beginning, that intention and structure are dialectically related, that the search for limits is itself heuristic, that form emerges from chaos, that you say in order to discover what you mean, that you invent in order to understand, as so on. (pp. 103-104)

In *Forming, Thinking, Writing* (1988), Berthoff instructs students to observe and draw a model, and then she goes on to explain to students the similarities between drawing and writing, an effort to follow her own maxim “to make composing not entirely different from anything else our students have ever done” (Berthoff, 1988, p. 10) a maxim that connects with today’s concerns over the disconnection between in-school and out-of-school writing. As Palmeri (2012) notes, “for Berthoff, the composition class is ultimately a place where students employ multiple symbol systems (alphabetic, visual, auditory) in order to observe their observations and interpret their interpretations” (p. 41).

Although Berthoff’s conception of writing as a dialectical process of forming never gained much traction with other process theorists, her inclusion of multimodal activities in that process and her notion that meaning making takes places in multiple modalities is also seen in the work of others. Conceptualizations of process in writing have often involved
considerations of multimodal means of invention. For example, in “A Cognitive Process Theory of Writing,” Flower and Hayes (1981) define drafting as an act of translation, in which ideas generated in all forms of knowledge representation are rendered in written language. They explain the act of translating as

essentially the process of putting ideas into visible language. We have chosen the term translate for this process over other terms such as "transcribe" or "write" in order to emphasize the peculiar qualities of the task. The information generated in planning may be represented in a variety of symbol systems other than language, such as imagery or kinetic sensations. Trying to capture the movement of a deer on ice in language is clearly a kind of translation. Even when the planning process represents one's thought in words, that representation is unlikely to be in the elaborate syntax of written English. (Flower & Hayes, 1981, p. 373)

Here, Flower and Hayes emphasize that conceptualizing often occurs in modes other than alphabetic language, which the writer must then encode into that language. In a later text, “Images, Plans, and Prose: The Representation of Meaning in Writing,” Flower and Hayes (1984) assert the difficulty of this act of translation, stating that “writers must often struggle to capture, in words, information that would better be expressed in other ways” (p. 132). As writers plan, they engage in “the purposeful act of representing current meaning” to themselves (p. 124). Such representation can take place in any number of forms, including nonverbal, procedural, and imagistic representations, the use of abstract networks of
knowledge such as schemata, concepts, or metaphor\(^3\), or writing plans in various stages of development. Flower and Hayes discuss these representations as multimodal, and consider the different modes of representation beneficial to the writer’s invention process:

We believe that multimodal plans are extremely helpful to the writer because they allow great flexibility in planning. They allow the writer to plan simultaneously at several levels, from primary goals to particular phrasing. They make it easy to mix images, sounds, and schemas in the same pot, and they allow the writer to delay decisions that are better made later in the writing process. (p. 145).

In their analysis of a think-aloud protocol of Allison, described only as a college graduate, Flower and Hayes compare her pre-translation planning to the work of a film director, who might imagine a scene “in terms of its music, the script, the physical and emotional presence of the actors, its thematic or conceptual statement, the resonance of its conventions and schemas, or the visual image created by lighting, staging, and cropping” (p. 126). Within this comparison, Flower and Hayes emphasize nearly every potential mode of communication as active in planning, which later, in the act of writing, must be converted or encoded into prose. This issue of translation later appears in the work of Kress, and the work of neuroscientist Antonio Damasio, who has developed a theory concerning the relationship between emotion and rationality, supports the claims about writing and translation. He states “language—that is words and sentences—is a translation of something else, a conversion

\(^3\) According to Flower and Hayes (1984), schema is defined as “a large, well-learned, densely interconnected network of information” generally known to people (p. 137). In contrast, a concept is defined as “a more specific, often personally defined network,” (p. 137). Metaphor is “a network that is often understood by analogy to another (usually more concrete) concept” (p. 137).
from nonlinguistic images which stand for entities, events, relationships, and inferences” (Damasio, 1999, p. 107).

Process and Rhetorical Invention

According to Prior (2004), to trace the “ways of acting” (p. 167) involved in the composition of a text is to focus on invention. As one of the five canons of classical rhetoric, invention has a long “shelf life” in Composition Studies. Prior et al. (2007) point out that, along with arrangement and style, invention has continued to receive attention even as a focus on memory and delivery have declined. Recent work on invention offers very different approaches to invention from approaches of the past. Within the traditional process approach to composition, invention has been conceived largely as a means of constructing a text, a conceptualization reflected in Prior’s assertion that the focus on how we compose is a focus on invention. Research concentrating on heuristics (Denecker, 2010; Haller, 2000; Jones, 2010) and research that focuses attention on the generation and development of argument (Brooke, 2009; Crosswhite, 2008; LeFevre, 1987; Ratcliffe, 1999) fit within this traditional approach. Many (Brooke, 2009; Dobrin et al., 2011; J. Murray, 2009; Prior et al., 2007) suggest that our notions of invention must adapt and change in the face of postprocess and post-postprocess theory and as a result of the influences of new media on writing.

Brooke (2009) notes the reductionist definitions of invention inherent in many composition handbooks, which restrict invention to “‘prewriting’ or ‘planning’ to be executed prior to the production of the formal essay” (p. 62), a reduction he associates with a formulaic process model of composition and to which he objects. This echoes the work of Prior et al. (2007), who understand invention “as a process that goes on throughout the entire
work.” Brooke (2009) argues that we need a broader understanding of invention, one that steps outside of the “modernist figure of the author” (p. 62) and the “fairly limiting model of textual economy” (p. 62). Dobrin et al. (2011) agree. They connect invention to Burke’s concept of scene, which “designates both the plasticity of the space in which writing happens and the materiality of writing itself” (p. 7). Each writing situation is, therefore, different, and writing “acts as a primarily speculative application” or “a logic of inscriptive conjecture” (p. 7). Each scene “changes the possibility of thought” (p. 8) and is, therefore, inventive. This is much the same point as Bitzer’s (1968) notion of the rhetorical situation.

In their remapping of rhetorical activity, Prior et al. (2007) suggest a re-conceptualization of invention into “production,” incorporating not only the formation of the ideas of the text and the text itself, but also including considerations of the tools, practices, and contexts that shape the formation of a text. They note that this concept “merges individual and collective invention with the mediated force of technologies, genres, discourses, and practices” moving away from a focus on the single author as inventor. This move is in line with the broadening focus between process and post-process theories. In contrast, Brooke (2009) highlights the act of invention not as an act initially focused on textual production, but one in which a text (eventually) emerges from fragmented chaos. Drawing on Dewitt’s (2001) discussion of hypertext, Brooke discusses invention as connection, as fragmented experiences that are pulled together to create new meaning, a “proairetic” invention or an amassing of data. Dewitt (2001) also notes a chaos in invention, contrasting its disorder with the sturdiness of the resultant product, noting that during invention, there is disorder and complexity, but “as ideas are superimposed and layered, they
reshape and reform, they adapt and respond until the […] text is solid, dense, and sturdy” (Dewitt, 2001, p. 74), which Brooke defines as that moment when the “ecology of invention starts to grind to a halt and a product, a textual object, results” (p.67). Brooke’s conceptualization, like that of Dobrin et al. (2011), emphasizes potentialities, and is supported in the work of Rice (2007), who suggests the concept of chora (represented as folksonomies) as an update of the Aristotelian topoi. These contemporary ideas concerning invention, many of which include a consideration of the effects of new media on writing, move away from rigid heuristics and are, instead, more open, more associative, and, as Brooke (2009) argues, more chaotic.

Concluding Thoughts

As evidenced here, multimodality is not an entirely new or foreign concept in the discipline of Composition Studies. As argued by Palmeri (2012) and as shown here, scholars in the early stages of the process movement attended to meaning making as multimodal. What is different now, in this moment, perhaps, is that scholars in Composition are relinquishing, willingly or unwillingly, the singular focus on alphabetic text as a valid means for communicating knowledge and ideas. What this means, then, is that our focus on the potentials of multimodality move from the inventional or idea-generating times and spaces for composing into all aspects of our composing processes, including our products, and involving a broader focus on the mediation of tools. Because Composition Studies has been somewhat resistant to this shift until now, when it has become almost imperative, our theories and our pedagogies must “catch up” with the world of communication at large. As demonstrated here, the theoretical work began some seventeen years ago, in the work of
members of the New London Group. At the same time, our ideas about writing processes have changed, broadening to focus not on the single writer working alone to compose, but to focus on writer, act, tools, resources, socio-historical and cultural contexts, relationships, and material circumstances. Thus, we have a “double broadening.” Not only have our concepts of appropriate means to communicate knowledge expanded, so, too, have our ideas about what is involved in the composing process. More work is needed, then, to provide narratives of students composing in this somewhat foreign, somewhat familiar broadened territory that is composition. We cannot assume that what we know about writing processes for alphabetic texts translates smoothly into composing in multiple modes. If we hope to help our students develop into critical, effective composers of multimodal products, we need research into multimodal composing processes to inform further develop of our pedagogical approaches and instructional strategies aimed at achieving this goal.

An activity theory approach to process research is appropriate, as activity theory inherently accounts for the complexity of activities, actions, and operations as well as the mediating texts and tools involved in an act of composition. Further, activity theory can account for contradictions and conflicts between the various activity systems in which a subject may simultaneously belong. For example, in an academic writing situation such as the one studied in this dissertation, each participant was a member both of his or her social group, the group represented in the composition, and a member of the course for which the composition was produced. Finally, as Nardi (1996a) explains, activity theory is a descriptive rather than predictive tool, making it appropriate for the descriptive work of studying composing processes.
The Multimodal Composing Practices of First-Year Composition Students

Although scholars in Rhetoric and Composition have built an impressive body of literature on writing processes, as well as an ever-growing body of theoretical and pedagogical scholarship that has opened and extended conversations on multimodal composition within Composition Studies, there is, at present, a paucity of empirical research that examines what student writers actually do while they are composing multimodally. As Anson (2008) notes, there has been a lack of methodical, replicable empirical research in the field for approximately thirty years now, as scholarship has taken a more theoretical turn. Haswell (2005) argues that the National Council of Teachers of English and the Conference on College Composition and Communication have, in fact, engaged in “war” against RAD (replicable, aggregable, and data-supported) research, evidenced in the decline in publication of such work in their journals and the low number of presentations involving such work accepted to their national conferences. Prior (2004) directs specific attention to the lack of current work in writing processes, while Takayoshi (n.d.) points to the dearth of research on students engaged in digital, multimodal work. Further, Wysocki (2004b), Brooke (2009) and Shipka (2011) suggest that there is little work that is useful for foregrounding and understanding the rhetorical decisions students make in composing multimodal texts. DeVoss, Cushman, and Grabill (2005) point to the paucity of scholarship “offer[ing] frameworks for understanding the spaces for and practices of composing in contemporary, technology-mediated ways” (p. 16). Takayoshi (n.d.) agrees, and claims that although some researchers do include “student writer voices” in their work, few offer “empirical, systematic examinations of what writers do when they write” (n.p.). She argues that in addition to
focused attention on the “what and why of new media” as emphasized in publications focused on multiliteracies and multimodal products, we need to give focused “attention to the how” (Takayoshi, n.d., n.p., emphasis in original). We need “more detailed, sustained examinations of composing as it happens” (Takayoshi, n.d.). The WIDE Research Collective (WIDE, 2005) supports the importance of such studies, noting that if we hope to teach writing effectively, we must understand what writers do when then they write to allow for intervention and support as needed.

This dissertation is a response to that call. This study involves a naturalistic case study of students composing multimodally, with a goal to advance the understanding of what writers do as they compose utilizing more than one semiotic mode through the discovery of patterns and themes that explain the complex systems involved in the processes of composing. As Prior (2004) notes, naturalistic accounts provide valuable information for tracing writing processes. Case studies allow the development of “in-depth understanding,” and are particularly appropriate when the “interest is in process—how things work and why” (Bernard & Ryan, 2010, p. 43). Such studies allow for “particularistic, richly descriptive, heuristic, and interpretive” reporting (Kamberelis & de la Luna, 2004, p. 247). The study is guided by a single research question:

RQ1: What processes do students engage in when composing multimodally?

Two sub-questions emerged from the single research question:

1a) How do students make decisions regarding the “available means” for delivery of their ideas?
1b) How do students navigate the use of various technologies for writing as they engage in multimodal composing?

Addressing these questions will help scholars in Composition Studies with a range of pedagogical questions and empirical implications. This project offers, as Linda Brodkey urges, the addition of “new pictures [of composing processes] that tell altogether different stories about writers and writing” (quoted in Shipka, 2011, p.32), “stories,” supported by theory and accompanied by analysis, that might help us better understand what it means to compose multimodally, and how we might help our students develop as multimodal composers.
CHAPTER TWO: METHODS

Any attempt to study the processes and activities of composing in any context and medium is a project that poses many methodological challenges. As Prior (2004) states, writing includes not only the act of inscription and the material product, but also the myriad of interactions engaged in the processes of composing. He argues that “tracing the writing process also means tracing the inner thoughts, perceptions, feelings, and motives of the writer(s) as well as tracing exchanges . . . between people” (Prior, 2004, p. 167). Tracing writing processes also involves a consideration of the tools utilized and the context in which the writing takes shape. Thus, a variety of strategies are necessary to “understand the contextual forces” (Kamberelis & de la Luna, 2004, p. 248) involved in composition and to capture the complexities of writing processes.

Kamberelis and de la Luna (2004) explain the difficulty of method selection in relation to their study of children’s writing:

Deciding on an approach (and concomitant units of analysis) to study children’s writing is difficult for several reasons. First, everything is relevant to understanding complex and highly situated activities such as children’s writing. Yet, one needs to draw boundary lines around any object of study to say anything meaningful about it. Second, complex activity systems are difficult to parse. (Kamberelis & de la Luna, 2004, p. 239, emphasis in original)

The complexities of studying writing extend beyond the context of children’s writing investigated by Kamberelis and de la Luna (2004). Within post-postprocess theory, agents, acts, scene, and agency are all significant, as well as the ways “purposive action is enabled in
part by technology” (Journet, 2011, p. 43). This broadened focus is why process studies remain relevant in 2013, and this may be particularly true within the complexities of multimodal composition and the “spaces for writing practices” created by new media technologies (Dobrin, Rice, & Vastola, 2011, p. 8). However, attempting to capture each of those elements within research data can be difficult.

If studying writing processes is a complex undertaking, studying multimodal composing processes can pose an even greater challenge. As Takayoshi (n.d.) explains, “although we recognize that multimodal technologies are changing compositions and composing, there is little methodological theory to guide research” on such compositions. Further, she argues that “multimodal composing processes require methods which are related to but distinct from methods for studying multimodal composing products” (Takayoshi, n.d., n.p.). While some scholars have begun to address the methodological challenges in studying multimodal work (Blythe, 2007; Hull & Nelson, 2005), these publications focus attention on gathering and analyzing data related to multimodal products. This is valuable information; however, as Takayoshi (n.d.) argues, many of the methods described by these researchers “do not provide guidance for researchers interested in capturing composing processes or textual traces of composing processes” (n.p.). Particular challenges include capturing the data needed in ethical ways utilizing means that do not interfere with the processes themselves, and constructing reliable sets of data. In addition to Takayoshi’s (n.d.) work, Geisler and Slattery (2007) also offer useful suggestions.

Although think-aloud protocol was the method utilized in many early process-oriented studies to capture the students’ thinking about composing (i.e. Emig, 1971; Flower & Hayes,
1981), this methodology has been criticized (Prior, 2004; Voss, 1993) as an unnatural intrusion into the processes of writing. Voss (1993) notes “few students and probably few writers really do use a tape recorder while they compose. The recorder becomes a part of the process being studied. And that skews the results, for all results reflect the recorder's presence as a factor” (p. 280). Emig (1971) comments on the distraction of the think-aloud protocol, stating the students found "composing aloud, the chief means [her] study employed for externalizing behavior, an understandably difficult, artificial, and at times distracting procedure" (p. 5). Geisler and Slattery (2007) suggest that think-aloud protocol methods can lead to issues of incompleteness and distortion. They note “if consciousness during a given activity is not normally verbal, the think-aloud protocol record may be incomplete; if participants turn their attention toward communicating with the researcher and away from the activity at hand, their activity may be distorted” (p. 187). Prior (2004) reminds us that think-aloud protocols “have usually been attempted only in laboratory conditions” (p. 180) rather than naturalistic settings, and have generally been coded according to typical, formulaic stages of “the” writing process.

Keystroke logging was used by process researchers such as Beach and Bridwell in the 1980s, and is now being reinvigorated as a method of data collection by researchers in Europe and coupled with eyetracking to capture the stroke-by-stroke processes of composing as well as the relationships between reading and writing. These methods are not as useful for multimodal composing, however, as some actions involved in multimodal composing do not rely on the use of a keyboard. Others have utilized videotaping to capture composing processes.
An alternative to the think-aloud protocols, keystroke logging, or videotaping as means to capture the students’ composing activities is to screen capture the activity on the screen. Examining a product as it evolves over time can allow a researcher to trace the development of that product, including additions, changes, revisions, and deletions through its maturation (Prior, 2004). Video screen capture software that captures all onscreen activity and maintains that record as a digital video allows the researcher to obtain a real-time recording of the evolution of a product, including not only any development of the actual product, but also other activities going on onscreen that might influence the production. Because screen capture software runs in the background, it is a nonintrusive method of data collection.

Takayoshi (n.d.) recommends screen capture data as “a unique type of data evidencing work writers undertake on computers” (n.p.). Encouraging researchers to think about methods of data collection as existing on a continuum related to their proximity to the moment of composing, she notes that screen capture video is immediately connected to the composing act, therefore it offers an “in the moment” look at composition in action (Takayoshi, n.d.). This is invaluable, as “a writer’s descriptions of her writing process may be necessary but not sufficient data” (Takayoshi, n.d.). She suggests that combining methods that capture data in the moment of composing, which records what writers actually do, might be productively combined with methods more separated from the moment of composing, which provide insight into writers’ attitudes and beliefs, to gain a more thorough (if still incomplete) picture of composing. As Geisler and Slattery (2007) argue, “video capture technologies provide a useful means of capturing a rich sense of writerly activity by producing a detailed record of digital writing processes and of the artifacts produced in a
digital writing environment” (p. 185). Such data can be analyzed at multiple levels “ranging from a fine-grain analyzing at the level of operation to a big-picture analysis at the level of action and activity” (Geisler & Slattery, 2007, p. 185).

Although video screen capture has been used frequently and for some time by technical writers to develop computer tutorial videos (Geisler & Slattery, 2007), it is only beginning to gain attention as a means of studying digital composing practices. Geisler and Slattery (2007) point to two articles published by Geisler (one in 2001 and a second in 2003), and to Slattery’s unpublished doctoral dissertation (completed in 2006), as early examples of research involving screen capture data. Swarts (2004) offers another example by illustrating how writers might use screen capture to facilitate reflection into their own writing activities. Each of these studies involved technical writers, and each was conducted in the workplace as the setting.

Drawing on the work of these researchers, this study was designed as a seven-week naturalistic case study of students working with multimodal composing within a single first-year writing class at a research-intensive university. The remainder of this chapter offers detail and discussion of the methods of the study including sampling and site description, a description of the participants, instructor profile and course design, information on data collection, and a discussion of data analysis.

**Sampling and Site Description**

A single section of the required first-year composition course, ENG 101, at a large research-intensive university in the southeastern United States served as the setting for this study, representing non-probability, purposive sampling. Lindlof and Taylor (2002) explain
that in purposive sampling, “sites or cases are chosen because there may be good reason to believe that ‘what goes on there’ is critical to understanding some process or concept” (p. 122). Given that the objective of this study is to describe and analyze the processes and activities of composing and rhetorical decision-making engaged in by students (rather than to generalize), there is “good reason to believe” that a first-year writing course is an appropriate site for study. Focus on a single class that engages in multimodal composing, utilizing multiple methods of data collection, allowed the development of thick description within a manageable set of data.

ENG 101: Academic Writing and Research is a four-credit-hour required course designed to offer instruction in rhetoric and the forms and practices of academic inquiry, writing and research. According to the university catalog description, the course offers Intensive instruction in academic writing and research. Basic principles of rhetoric and strategies for academic inquiry and argument. Instruction and practice in critical reading, including the generative and responsible use of print and electronic sources for academic research. Exploration of literate practices across a range of academic domains, laying the foundation for further writing development in college.

Predominantly taught by non-tenure-track faculty and graduate teaching assistants, ENG 101 follows a “writing in the disciplines” model in which students are introduced to the language conventions and genres of various disciplinary communities including the Humanities, the Natural Sciences, and the Social Sciences. The purpose of this model is to better prepare students for the types of academic writing they will do outside of the first-year writing course. Most students enroll in this course as freshmen. Students may be exempted from the
course on the basis of standardized test scores, Advanced Placement scores, or International Baccalaureate scores. Conversely, students may choose to enroll in ENG 100: Introduction to Academic Writing, a non-credit bearing course offered for those students who feel they need additional preparation in academic writing before enrolling in the required course. Sections of ENG 101 are capped at 22 students.

In the fall semester of each academic year, one-half of the incoming freshman class is randomly selected and randomly enrolled in sections of ENG 101, with the remainder enrolled the following spring. It can be anticipated that this process of batch enrollment into ENG 101 sections offers heterogeneous representation of the student body at this university within a single composition section⁴. A single heterogeneous classroom comprises a diverse group of students representing a wide range of abilities, varying levels of motivation, and differing backgrounds and experiences. A heterogeneous writing class, therefore, offers maximum variation sampling within the scope of the university population, allowing the researcher to “study the variation in a . . . phenomenon” (Lindlof & Taylor, 2002, p. 123). Further, it represents typical case sampling (a subcategory of purposive sampling), described by Patton (2002) as “illustrative not definitive,” a site selected because “it is not in any major way atypical, extreme, deviant, or intensely unusual” (p. 236).

The particular section of the course was selected for study based on the incorporation of a multimodal project in the instructor-established syllabus (the inclusion of a multimodal project).

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⁴ Data from the office of University Planning and Analysis reveal that the 2012-2013 freshman class at the selected university included 4398 degree-seeking, first-time freshmen, 74.8% of whom self-identified as white. This freshman class presented an average (weighted) high school GPA of 4.37, a mean SAT score of 1218, and a mean ACT score of 27.
The first-year writing program designated the selected section of the course as a “bring your own laptop” course; this meant that the students in the course provided their own laptop or tablet computer. Students who were unable to provide their own computers for the class were offered the opportunity to switch to a different section of the course at the start of the semester during the university’s “drop/add” period. The class met in a flexible-space classroom successfully piloted at the university during the previous semester. This classroom was fully furnished with moveable furniture including tables of various shapes and sizes, padded chairs of two styles, and two types of stand-alone desk/chair combinations that could be arranged in many different configurations within the space. The room was outfitted with six rolling, double-sided whiteboards and five LCD display screens to support a variety of instructional and collaborative activities, as well as wall-mounted whiteboards across the traditional “front” of the room, a ceiling-mounted digital projector, speakers, and a retractable, electronic projector screen. The only immovable furniture in the room was the instructor station, located in the extreme front left of the classroom. This station included a desktop computer and the controls for the ceiling-mounted projector, speakers, and projector.
screen as well as a “counter like” workspace. The LCD display screens, wall-mounted around the room, could be linked to the digital projector so that each one mirrored the instructor’s monitor. Alternatively, the screens, outfitted with VGA, DVI-D and HDMI cables, as well as adaptors for Macs, could be paired with student-owned laptops. Reliable wireless access to the university’s network and to the Internet was available.

Because of the moveable nature of the furnishings in this classroom, the space was never organized the same way twice, nor did it typically maintain a single configuration for the duration of a class period. Even so, students had a tendency to select seating in the same general area of the room for each class meeting. Because the instructor divided students into groups for collaborative work based on their location in the room, students tended to work with the similar groups of classmates throughout the project. Minor variations in group membership occurred based on the number of students present for each class meeting. In keeping with the programmatic focus on active learning and collaboration, the instructor offered numerous opportunities for students to get out of their seats and move about the classroom for various activities, encouraging different collaborative arrangements outside of formal group work. One example of such an activity was when students posted their individual storyboards, art gallery style, around the room, and then the class, armed with post-it notes, was encouraged to browse the storyboards and leave comments. Interestingly, students seemed uncomfortable with activities that involved commenting on the work of others outside of a smaller peer group arrangement, particularly when their comments were very publically displayed. Although they were willing to offer oral suggestions to one another, they were more reticent to post written comments in the manner requested by the
instructor. This held true during the video screenings at the end of the project, as well.

Students were hesitant and reserved with commenting publically on the videos composed by their peers.

Twice during the duration of the project, the class met in the “Learning Commons” area of the main campus library. The Learning Commons is an innovative library space devoted to collaborative work, technology access, and what I would term “interactive study.” During the class periods in the library, the instructor held individual conferences with each student to discuss his/her progress on the project, while other students utilized the time by working on their projects, locating resources, and getting assistance from classmates and the librarians. The librarians were available to offer assistance with locating sources as well as with navigating the technology. I do not know whether any students took advantage of this resource, however, as I was involved in student-teacher conferences. None of the study participants reported asking the librarians for help at this point in the project. Most students in the class congregated in groups of two or three in the computer workstation area of the learning commons, as this was the location of their conferences. A few students ventured into a seating area slightly farther away near the gaming area of the Learning Commons.

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5 I describe the study that takes place in the Learning Commons as “interactive study” because it rarely involves a single student studying alone. Instead, groups of students are often found working together, interacting with one another, with technology, and with their coursework. It is not the type of quiet, “still” study space often associated with libraries.
Participants, Demographics, and Backgrounds

After receiving human subjects’ approval for this study from the Institutional Review Board, I visited the selected class four weeks prior to the start of the study to introduce the study and to solicit volunteers. Seven participants from the targeted section of ENG 101 initially volunteered to participate in the study; however, within the first few weeks of the study, one participant stopped attending the class. During the course of my observation, I would learn that the six students who completed the study were the first to contribute to class activities and each of these students seemed confident in their capabilities as students.

Just prior to the start of the study, these students completed informed consent forms. Each participant was provided with the appropriate Camtasia® software for his or her computer platform. At the conclusion of the study, participants were compensated for their participation with $50 gift cards.

Background information was solicited from students through a researcher-developed survey completed before they began work on their digital autoethnography projects. In addition to general demographic questions, the survey asked students about their educational background and their prior writing experience. Further, students were asked to rate their familiarity with various technologies on a scale from “very comfortable” to “I don’t know what this is.” They were asked to indicate whether or not they had experience with various activities utilizing specific technologies, and to indicate their preferences and beliefs about technology and the uses of technologies in education and their planned profession. This survey had been piloted in two focus groups on two university campuses (including the site of this study) as well as in full implementation as a part of an earlier research project I
conducted with a fellow researcher. Minor additions were made to the survey for this dissertation project. I added short response questions to the survey to elicit more detailed information about the students’ prior writing experience. These questions were modeled on survey questions utilized by Joo Hee Huh (2012) in her dissertation research. The information from these surveys allowed me to gain an understanding of the students’ backgrounds, their ideas about writing processes, and their comfort levels and attitudes related to technologies. The background information provided here has been culled from the completed surveys.

One participant, Morgan, completed only the general demographic questions on the survey, and a second student, Elena, did not respond to any of the items in the section on “Preferences and Beliefs” regarding technology; therefore, the data reported here on educational background, prior writing experience, technological familiarity and technological preferences are necessarily incomplete. Rather than provide summarized data divorced from the individuals represented in that data, I’d like to offer first a brief introduction of each of the students whose voices, and whose work, are represented in this study.

Tyler is the only male participant in the study. Born in a large city within the state, he moved to the suburbs at the age of eleven. Tyler has an interesting academic background. He attended a private Montessori school for the first few years of his education (kindergarten through second grade). In third grade, he left the Montessori school and began to attend public school. He continued to attend public school through elementary, middle, and high

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6 Names of each of the participants have been changed in accordance with the IRB approval of this study. Students were offered the opportunity to select their own pseudonym.
school, although his high school experience was atypical. Because he had exhausted many of
the academic offerings at his assigned public high school, in the eleventh and twelfth grades
Tyler was co-enrolled in online classes through a state-supported high school for students
gifted in math and science. Additionally, as a senior in high school, he was enrolled at a state
university near his home for one semester, where he took a single course in Calculus level
III. Therefore, for one semester, he was simultaneously enrolled in three different schools.
He plans to major in Nuclear Engineering. Tyler is an avid runner, a gamer, a Star Wars
fanatic, and a boy scout. He chose to focus his digital autoethnography on runners.

Elena is an African American female, a self-proclaimed “military brat.” When I asked
where she was from, she responded orally that she was from “everywhere and nowhere.” On
her written survey, she reported having lived in four different US states, including her current
residence in a military-focused city about an hour from the university, and she lived in
Germany for three and a half years. Her longest tenure in any school was four years, from
kindergarten through third grade. She expressed a particular interest in the independent music
scene, and had traveled to many different concert venues. Elena’s digital autoethnography
explored the impact of deployment on military children. She plans to major in Animal
Science.

Catherine is from a very small mountain town in the western part of the state, where
she lived all of her life before coming to the university. A Fish and Wildlife Management
major, Catherine had work experience as a foreman on a farm. It was obvious in my
conversations with Catherine that although she enjoyed her classes, she was having a difficult
time adjusting to being away from her family, particularly at a university that was larger than
the size of the town where she grew up. In informal conversation, Catherine shared that the “town limits” of her hometown covered just under four square miles. In part because of her homesickness, and in part because she knew she’d be presenting her video just before the holidays, Catherine decided to focus her digital autoethnography not on the group she originally chose—an on-campus Christian group—but instead on Christmas tree growers. Her family is a partial owner of a Christmas tree farm, something Catherine is quite proud of.

Amanda is quiet. More likely to be vocal in small group exercises, she would speak out in whole class discussion when called on, but never without blushing. Also from the Western part of the state, she attended public school within the same school district for her entire K-12 education, where she played basketball and softball. In casual conversation, she expressed to me that her religion is very important to her, and she is active in Campus Crusade for Christ. An elementary education major, she chose to focus on teachers for her digital autoethnography. In her interview, Amanda shared with me that going into the project, she was feeling uncertain about her choice of major. By the end of the project, she was convinced that she had made the right choice based on what she learned in her research for the project.

Maryam was born in Casablanca, Morocco, where she lived until she was seven before immigrating to the United States and taking residence in an urban area of the state. She reported being very confused when she came to the US, and having a difficult time adjusting at first. Maryam spoke of feeling caught between two worlds, both wanting to fit in

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7 At the conclusion of the fall semester, Catherine left the university and returned to her hometown, where she enrolled in the local community college.
and “be American” but also wanting to retain her ethnic background, a feeling that is particularly strong when her family returns to Morocco to visit. Fittingly, she chose to focus her autoethnography on immigrant students and their adaptation to life in America. She, too, attended public school since coming to the United States, including an International Baccalaureate magnet middle school. Maryam is a Biological Sciences major.

Morgan was the only out-of-state student in the participant group, coming to the university from New England. Like Elena, Morgan has a military parent, but she reported that Texas was the only other place she really had lasting memories of. Listing “not sure” as her major, Morgan chose her high school clique as the social group for her digital autoethnography video. Though initially the class instructor was not sure how this would work, once Morgan offered evidence of the very stratified social structure of her high school, the project was approved. Morgan did not complete the entire background survey; she only provided the demographic data, and even then provided sparse information.

Writing Experience

As asked about their writing experience prior to ENG 101, four of the five students who completed the survey\(^8\) reported that they were required to complete writing assignments in high school, which they described as essay answers for tests, short responses to assigned reading or short answers on tests, essays about literature, essays requiring the use of sources, written explanations for solutions to math problems, lab reports, research papers, or, less frequently, blog entries or peer review letters. The fifth student, Elena, responded that she

\(^8\) Morgan did not complete this portion of the survey, nor any of the sections subsequently discussed.
had been required to do very little writing outside of a single course, Advanced Placement Language and Composition, in her junior year of high school. Students reported that the longest paper they had written prior to ENG 101 was either eight pages (three students), ten pages (one student) or twenty-four pages (one student). Four of those papers (those in the 8-10 page range), were described by the students as “research papers” completed in the eleventh or twelfth grade. The twenty-four page paper, reported by Elena, was described as a “story created off the top of [her] head” written for an Advanced Placement Psychology course in the tenth grade.

Asked whether or not their other classes at the university required writing, two students indicated none of their other classes involved writing. Three students specified one or two other courses in which writing was expected. Based on the students’ descriptions, some of their writing involved low stakes “writing to learn” assignments such as explaining the process used to arrive at an answer in math. Other assignments described by the students included lab reports or essays, as well as writing for assessment such as responses to essay questions.

Each student was asked to describe his or her typical process for writing an essay prior to ENG 101. Although they were encouraged to explain if their processes were different for different types of writing assignments, I did ask specifically about writing formal essays, as the digital autoethnography project was assigned in lieu of a formal autoethnographic essay. Therefore, the participants responded to this question in the context of writing formal essays for a class. Each of the four students who responded to this question described a single writing process. (In other words, no student described more than one writing process.) There
were slight differences in the responses; however, it was interesting how similarly the students described their processes, which might suggest the influence of previous instruction. Because four of the five students who completed this section of the background survey attended public schools within the same state as the university, their past instruction was based on the standard curriculum of the state. Therefore, it can be assumed that these students had similar instruction. Two students described their processes as recursive. One of these students, Elena, wrote: “generally, I would jump in and begin writing. I would write for an amount of time then read it, take out what I didn’t like, and then continue until I was done.” Amanda explained “I would start writing, do some changes as I went, then would read through and [sic] for clarity and organization, then I would spell check and print.” Two students, Tyler and Maryam, described their processes in a more linear fashion, and each specifically mentioned planning prior to beginning to draft, though they described this planning in somewhat different ways. Tyler indicated that he would “research” and “outline,” followed by “rough draft,” then “personal review” before a “peer edit” and a “final draft.” Maryam drew a flow-chart with directional arrows connecting “usually I just outline/brainstorm the rough draft” to “revise/edit,” then “final draft” followed by “proofread” and “finalize paper.” Catherine explained nothing about her process beyond the planning stage. She noted that she would “plan out on a separate sheet of paper” her “intro [sic] with thesis,” along with “at least two or three points,” and a “conclusion,” with “notes under each heading on each topic to guide” her writing.
Familiarity and Comfort with Technology

This section of the survey queried students about their comfort level with specific technologies, their past uses of those technologies, and their preferences for using technologies in their classes. Table 1 shows the student responses on the question regarding the students’ comfort levels with various technologies. Students were instructed to place an “X” in the box that best described their level of comfort with the basic uses of each technology, ranging from “very comfortable” to “I don’t know what this is.” Simple summation calculations were applied to the data and were converted to percentages.
Table 1. Participants’ self-reported familiarity with various technologies

<table>
<thead>
<tr>
<th>Technology</th>
<th>Very comfortable</th>
<th>Comfortable</th>
<th>Somewhat comfortable</th>
<th>Uncomfortable</th>
<th>I know what this is, but I’ve never used it.</th>
<th>I don’t know what this is.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop computer</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laptop computer</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flash drive</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video camera</td>
<td>60%</td>
<td>20%</td>
<td>20%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digital camera</td>
<td>80%</td>
<td></td>
<td>20%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scanner</td>
<td>40%</td>
<td>20%</td>
<td>20%</td>
<td></td>
<td></td>
<td>20%</td>
</tr>
<tr>
<td>iPod or other MP3 player</td>
<td>80%</td>
<td></td>
<td>20%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course management systems such as Moodle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email programs (gmail, etc.)</td>
<td>80%</td>
<td></td>
<td>20%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet browsers (Firefox, Chrome, Explorer, Safari)</td>
<td>80%</td>
<td>20%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word processing software (such as Word, iPages, OpenOffice Writer)</td>
<td>60%</td>
<td>40%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presentation software (i.e. Powerpoint, Keynote, Impress)</td>
<td>60%</td>
<td>40%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spreadsheet software (i.e. Excel, iNumbers, Calc)</td>
<td>40%</td>
<td>20%</td>
<td></td>
<td>40%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

68
(TABLE 1. Participants’ self-reported familiarity with various technologies, con’d)

<table>
<thead>
<tr>
<th>Technology</th>
<th>Very comfortable</th>
<th>Comfortable</th>
<th>Somewhat comfortable</th>
<th>Uncomfortable</th>
<th>I know what this is, but I’ve never used it.</th>
<th>I don’t know what this is.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database software (i.e. Access, OpenOffice Base)</td>
<td>40%</td>
<td>20%</td>
<td></td>
<td></td>
<td></td>
<td>40%</td>
</tr>
<tr>
<td>Web design software (i.e. Dreamweaver, CS3)</td>
<td></td>
<td></td>
<td></td>
<td>40%</td>
<td>20%</td>
<td>40%</td>
</tr>
<tr>
<td>Blogging technologies (i.e. Blogger, Wordpress, etc.)</td>
<td>60%</td>
<td>20%</td>
<td></td>
<td></td>
<td></td>
<td>20%</td>
</tr>
<tr>
<td>Smartphones (iPhone, Android-based phones)</td>
<td>60%</td>
<td>20%</td>
<td></td>
<td></td>
<td></td>
<td>20%</td>
</tr>
<tr>
<td>Video chat programs (such as Skype)</td>
<td></td>
<td></td>
<td></td>
<td>20%</td>
<td>60%</td>
<td>20%</td>
</tr>
<tr>
<td>Gaming systems (xBox, Playstation, Wii, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20%</td>
</tr>
<tr>
<td>Photo editing software (Photoshop, etc.)</td>
<td>60%</td>
<td>40%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screen recording software (Jing, Camtasia, etc)</td>
<td>60%</td>
<td>20%</td>
<td></td>
<td></td>
<td></td>
<td>20%</td>
</tr>
<tr>
<td>Audio recording software (Audacity)</td>
<td></td>
<td></td>
<td></td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>Video editing software (Adobe Premiere, Sony Creative software, Final Cut, iMovie)</td>
<td>20%</td>
<td>20%</td>
<td></td>
<td></td>
<td></td>
<td>40%</td>
</tr>
</tbody>
</table>

       | 60%       | 40%       |                      |               |                                               |                            |
Table 1 evidences that all of the participants who responded to this portion of the survey are “very comfortable” with use of hardware such as computers and flash drives, as well as use of the Internet. Further, they are either “very comfortable” or “comfortable” with email and word processing software. This makes sense, as these are technologies that they have likely used with some frequency in their educational experience. Responses range from “very comfortable” to “somewhat comfortable” with technologies such as course management systems (which may have been very new to these students as first-semester college freshmen), presentation software, video and digital cameras. Sixty percent (three of five students) are “very comfortable” with course management systems. Familiarity with the university’s course management system is important for this project, as all of the assignment information was disseminated through that system. Sixty percent (3 students) are also comfortable with video cameras, while eighty percent (4 students) are “very comfortable” with digital cameras. They are familiar with photo editing software, which all rated as “very comfortable” or “comfortable.” Although it would be possible to create a digital autoethnography without familiarity with camera technologies, and certainly without familiarity with photo editing software, knowledge of these would be useful. For this project, it is interesting that three students reported being “uncomfortable” or unfamiliar with audio recording software, and two students reported being “uncomfortable” with video editing software. Only one student reported being “very comfortable” with either of those technologies. This is significant as these technologies are integral to their digital autoethnography projects. Overall, the students are least familiar with web design software, which they all rated as uncomfortable, unfamiliar, or unknown to them.
Table 2 reports the results of the question about past uses of technology. Students were told that this question was designed to help me learn about the ways they had used technology for production purposes. I did not include word processing as an activity in the question because each of the students had used word processing earlier in the semester in ENG 101. They were instructed to indicate “yes” if they had done the activity before, and “no” if they had not. Simple summation calculations were applied to the data and converted to percentages.

**Table 2. Participants’ self-reported past uses of technology**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Created a presentation using Powerpoint</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Created a presentation using a web-based program such as Prezi, Slide Rocket, Empressr, or similar program</td>
<td>80%</td>
<td>20%</td>
</tr>
<tr>
<td>Participated in a video chat using Skype or a similar application</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Edited photos using a cell phone application such as Instagram</td>
<td>60%</td>
<td>40%</td>
</tr>
<tr>
<td>Edited photos using Photoshop, Picasa, GIMP, or similar program</td>
<td>80%</td>
<td>20%</td>
</tr>
<tr>
<td>Added content to a content-sharing service such as Pinterest or ShareThis</td>
<td>40%</td>
<td>60%</td>
</tr>
<tr>
<td>Created audio content (music, podcasts, etc.) using Audacity, Garageband, or a similar program or application</td>
<td>40%</td>
<td>60%</td>
</tr>
<tr>
<td>Created videos using a computer-based application such as iMovie, Movie Maker, Adobe Premiere, Sony Creative software, Nero 10, or Final Cut</td>
<td>80%</td>
<td>20%</td>
</tr>
<tr>
<td>Uploaded videos to YouTube</td>
<td>20%</td>
<td>80%</td>
</tr>
<tr>
<td>Created a multimedia blog using Tumblr or a similar platform</td>
<td>40%</td>
<td>60%</td>
</tr>
<tr>
<td>Added information or revised existing information on a wiki such as Wikipedia</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Created a mash-up</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Created animated multimedia content using Adobe Flash, Anime Studio, or similar program</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>Created and launched a website</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>
Based on the data shown in Table 2 the only uses of technology that were common to all of the participants were the creation of PowerPoint presentations and participation in a video chat. Four students reported having previously created a presentation in a web-based presentation program, edited photos, and created videos. Curiously, four indicated that they had previously created a video using iMovie or similar software, while one, Amanda, reported never having done this. However, at the end of the semester, when I asked students during their interviews if they had ever composed a video using this software, not a single student indicated that they had done so prior to their digital autoethnographies. Several possibilities might account for this discrepancy. First, students may have feared appearing unprepared or underprepared to complete the project they were being asked to complete. A second possibility, and one that Tyler reported was true in his case, was that the students had opened the software on their computers and had used it for consumption purposes (such as a simple upload and playback), but had not used it for the level of production required by this assignment. For example, Tyler explained he had uploaded video footage recorded on a digital camcorder into iMovie following his high school graduation, but he had never attempted to create a video in the way that this project required. A single student reported having uploaded a video to YouTube, and none of them had ever added or revised information on a wiki, created a “mashup,” created animated content, or created and launched a website.

In addition to questions about their familiarity with and previous uses of technology, participants were asked about their preferences and beliefs regarding the use of technology.
for projects. The four students\(^9\) who responded to this final section of the survey predominantly indicated that they enjoyed projects using technology; however, three of the four indicated that that were “nervous” about using technology to compose their autoethnographies. A majority (three out of four) indicated a belief that it is important to learn to use technologies to integrate image, sound, and video into a composition. Amanda, the elementary education major, indicated that this was not important. The students were evenly divided on whether or not it would be important in their planned careers or professions to know how to use technology to compose multimodally. These results can be seen in Table 3 below. Again, results were tallied using simple summation and converted to percentages. The percentages indicate the number of students who agree with the each statement, or who believe the statement describes them.

\[^9\] Neither Morgan nor Elena responded to this section of the survey.
Table 3. Participants’ preferences and beliefs about technology use

<table>
<thead>
<tr>
<th>Statement</th>
<th>Agree (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I prefer projects that do not require much use of technology beyond basic word processing.</td>
<td>50%</td>
</tr>
<tr>
<td>I enjoy projects that involve simple uses of multimodal technology such as adding images or figures to my work.</td>
<td>75%</td>
</tr>
<tr>
<td>I enjoy projects that allow me to use technology to create interesting compositions.</td>
<td>75%</td>
</tr>
<tr>
<td>I enjoy using technology for projects, but I don’t feel confident using it.</td>
<td>50%</td>
</tr>
<tr>
<td>I am nervous about using digital technologies to create multimodal compositions such as the digital autoethnography.</td>
<td>75%</td>
</tr>
<tr>
<td>I am excited about using digital technologies to create multimodal compositions such as the digital autoethnography.</td>
<td>50%</td>
</tr>
<tr>
<td>I believe that it is important for me to learn how to use technology to integrate image, sound, and video into a composition.</td>
<td>75%</td>
</tr>
<tr>
<td>I do not believe that it is important for me to learn how to use technology to integrate image, sound, and video into a composition.</td>
<td>25%</td>
</tr>
<tr>
<td>I believe that it will be important in my career/profession to know how to use image, sound, and/or video to communicate ideas.</td>
<td>50%</td>
</tr>
<tr>
<td>I do not believe that it will be important in my career/profession to know how to use image, sound, and/or video to communicate ideas.</td>
<td>50%</td>
</tr>
</tbody>
</table>

Results in Table 3 suggest it could be expected that at least one student would dislike the digital autoethnography project, as it required extensive use of technology beyond simple word processing. Only two students expressed excitement about the project; this may be due to the trepidation the students had going into a project that required many actions that were less familiar to them. Although Morgan did not respond to this section of the survey, in her interview she noted that she “would have preferred to just write an essay” than to have to learn to use new software for a project that was 25% of her overall grade in the class. Although two students indicated they “prefer[red] projects that did not require technology,” one of those students joined two others who indicated they “enjoyed” multimodal work. The students were split on whether or not learning to use image, sound, and video would be
important in their future careers and professions, and this may have affected their “buy in”
and interest in the project.

**Instructor Profile and Course Design**

Although the course instructor is not a part of this study, her course design, project
design, assignments and expectations served as the context and exigency for the multimodal
composition that is integral to this study. Data gathered by this study reflect the influence of
the instructor; therefore it is important to consider her profile and the design of her course.

*Instructor Profile*

The instructor for this course was in her first semester as a full-time, non-tenure-track
Lecturer at the university, having completed her Masters of Fine Arts degree the previous
spring at the same institution. As a graduate teaching assistant, she assisted in one section of
ENG 101 as a co-teacher while working with a mentor before being the teacher of record for
two sections of ENG 101. A former journalist, she was delighted to be teaching full-time, and
was enthusiastic in her work with the students. During the semester of this study, she was
teaching three sections of ENG 101, which met back-to-back and followed the same syllabus.
The section of the course that served as the setting for this study was the second section to
meet each day. Therefore, the instructor had already completed the instruction and activities
with one group of students prior to my observation. On several occasions, she remarked that
she made slight changes or “tweaks” in the presentation of the material or the organization of
the activities with the class I observed after working through them with the previous class.
She also noted how the different “personalities” of the classes meant that no activity
“worked” the same in the individual sections.
The instructor explained that she attempted to be deliberate and thorough in planning her syllabus, the assignments, and her lesson plans. Activities and assignments were carefully sequenced to scaffold learning for the students, ensuring that they were introduced to concepts and skills as they needed them. Further, the instructor made a concerted effort not only to explain to the students what needed to be done to produce successful academic writing, but she also explained why academic writing adhered to certain conventions of genre and style. For example, during one class period the class examined the differences in MLA and APA citation and bibliography styles, and the instructor offered a very meticulous explanation of why the two styles are formatted differently based on the disciplinary communities that typically use each style and what each style emphasized. One particular concern for this instructor was that the students reference credible, scholarly sources in their work, and segments of several class meetings were devoted to understanding the difference between scholarly and popular sources (including the different standards for publication), methods for ascertaining whether a source is credible or not, and the impact source credibility can have on work that cites those sources.

Course Project Design

As previously noted, I was present in the classroom and collected data during the third project of the semester, a digital autoethnography video with a reflective paper. This project was designed to introduce students to the conventions of the social sciences disciplinary community. In the overall course sequence, the digital autoethnography followed two previously completed projects. According to the assignment sheet, project one was a 1,500-2,100 word rhetorical analysis in which the students were to “compare, contrast, and
analyze the rhetorical choices made by two distinct communities in two different publications—a study written by scientists and published in an academic journal and a popular article based on that research published online.” Students were provided ten pairs of articles (one scholarly and one popular article per pair), and they were instructed to choose one pair as the focus of their analysis. The articles were all based in the Natural Sciences, and this project was intended to introduce students to the disciplinary conventions of that community as well as to the ways writers adjust their styles for different audiences. Project two was focused on the disciplinary community of the Humanities, and also introduced visual analysis. It required that students write a 1,500-2,100 word essay citing four sources and analyzing the rhetorical choices made by an advocacy group on its website. Students were allowed to self-select the advocacy group. The digital autoethnography project was followed by project four, a multidisciplinary project that students completed in groups. The general assignment was to develop an argument for or against a solution to a contemporary dilemma and to present those arguments in a symposium. Students took on the roles of state senators, lobby directors and assistant directors, and expert witnesses. Each student had an individual preparatory assignment to complete based on his or her role, involving the completion of 1,500-1,750 words of writing and incorporating scholarly sources. In an email exchange, I asked the course instructor to place project three in the context of the other projects in the class. She explained:

So Project 3, in my mind, plays this role in my course sequence: it's the creation of a piece of rhetoric once we have explored and analyzed multiple other forms of rhetoric, including scientific/scholarly writing, popular reporting, and a website. It is
the social sciences unit, so that's the lens we examine it through with
the autoethnography idea (and we looked at written autoethnographies to examine the
conventions of that genre), but as you know, a multimodal assignment could really be
done in any discipline. And in Project 4, in our multidisciplinary assignment, students
use visual and verbal rhetoric in their presentations. So my basic idea with that
sequence--though I'm not claiming it's perfect by any means--is that we start by
analyzing verbal and visual rhetoric and by the end of the semester we are also
creating it more deliberately, i.e. with audience in mind.

On the very first day of the project, and my first day of observation, the class heard a
guest presentation from a Master’s student in Sociology (a student preparing for her thesis
defense), who introduced the discipline of Sociology and the methods Sociologists utilize to
conduct their research, including ethnography. This presentation was important because it
represented the first substantial information the students had about their projects, and it
provided the framework from which they began to conceptualize their videos. Interestingly,
however, none of the students mentioned this presentation or the activities completed as a
part of the presentation in either their written process reflections or their interviews with me.
The guest speaker informed the students that Sociology involves the “systematic and
scientific study of relationships between individuals and society,” and that sociologists
“research relational systems to find and explain patterns.” The class had been assigned to
read an ethnographic article about a Christian social group on a university campus, and the
guest speaker led a discussion of this article focused both on social groups and on
ethnography. Near the culmination of the discussion, the class determined that the term
“social group” might be defined as a cohesive group with tight social bonds, distinguished from the larger culture by what they do and do not do. The guest speaker then noted that the students’ assignment for project three was to “explore a social group you are a part of and explain it.” She explained that the work they would be doing was considered autoethnography, because they would be studying their own groups. The course instructor followed this by explaining to the students that an appropriate place to begin the project was to think about the social groups that were a part of their identities. The students then generated brainstorming lists of their social groups on the whiteboards around the room, and after completing their own lists, they walked around the room to read and discuss others’ lists.

Although other instructors in the department had previously assigned a digital autoethnography project and had shared information and ideas with the course instructor, this was the course instructor’s first experience assigning this project, or any digital, multimodal assignment. She was both excited and nervous. She expressed to me concerns that she would not have answers for all of the students’ questions, and that she and the students would have to become comfortable with “figuring it out as we go along.” To assist students in learning to use the technologies, she planned for an in-class workshop conducted by one of the university’s Emerging Technology Services Librarians, who also agreed to provide technical support throughout the project. Via Moodle, the course management system utilized by the university, the instructor provided the students with a comprehensive assignment sheet that, when printed, was three pages in length. The assignment sheet outlined the assignment requirements, the audience, and the various deadlines for the project components. Project
components included an annotated bibliography, a storyboard, an interview, and a “final draft” of a four to six minute video. Students were encouraged throughout the project to consider their videos “drafts.” Recognizing that many students had not completed this type of project previously, the instructor was concerned that the students would be overly anxious about the production quality of their videos, and this anxiety would hinder their work on the project. Hoping to alleviate such concerns, the instructor emphasized that the videos should be considered “works in progress” even in their final, submitted form. In addition to the video, students were required to compose a 1,000-1,200 word reflection paper that examined their process of composing the video.

One aspect of the assignment sheet highlights that this was a new assignment for the instructor. There is a slight disconnection in the very first list-like description of the assignment on the assignment sheet, and later, more detailed, descriptions. In the initial assignment description, the instructor indicates that the assignment is “to compose a digital examination of your place in a sociological group using an interview and scholarly and popular sources, and to reflect on that group’s larger place in society” (emphasis added). In the succeeding description, the students are told they will “create and narrate a video for your peers that reflects on and analyzes your larger connection to a social group.” In the first description, the purpose of the project is not only for the student to examine his or her membership in a social group, but also to orient that group within society. The second description, however, maintains the focus on the student and his or her place within the group. In the section of the assignment sheet offering direction on research and evidence, the instructor states
Your video autoethnography will be a digital portrayal of what it is like to be a member of your social group, why you joined (and in some cases, you might not feel you had a choice) and how that group affects your identity and lifestyle. Is your group shaped by religion? Politics? Race? Gender? Ethnicity?

In yet a later section of the assignment sheet, the instructor tells the students Just because this is a video does not mean you shouldn’t have a central claim. In fact, most documentary-style videos do—we’ll examine this more in class. Your thesis should be early in your video. As usual, it should go a step further than the obvious analyzing what conclusions you can draw about your social group based on your evidence. (emphasis added)

These two explanations represent another slightly different focus for the project. As the students began work on the project, they demonstrated some confusion about what they were really meant to accomplish in the videos and about the appropriate focus for their thesis statements. In discussing this with students, the instructor was consistent in emphasizing that the students needed to identify and analyze what made their social group a group based on sociological definitions of groups. In a conversation with me at roughly the midpoint of the project, the instructor expressed frustration with the students’ abilities to establish and develop a thesis. Later, she noted reflectively that she planned to rework the assignment sheet and make adjustments to the assignment sequence in light of her first experience with the project.
Data Collection

Multiple methods of data collection were employed to produce robust and information-rich data for analysis. Further, multiple sources of data offered the opportunity for triangulation to help ensure descriptive validity (Lindlof & Taylor, 2002). I chose to collect data that would provide me with the most complete possible understanding of the activities and processes the students engaged in while composing in a natural context, without being invasive. I first begin with a discussion of my role as a researcher during the period of my observations, and follow this with explanations and rationales for each type of data collection. The data collected were primarily qualitative; the only quantitative data collected were in the background survey previously discussed.

Researcher Role

For the seven-week duration of project three, I acted as what I would term a limited-participant observer in the classroom. I was present in the classroom for every 110-minute class meeting over the seven-week period of the project. Participant observation allows a researcher to observe behaviors from an emic perspective in a natural context, while the role of observer-as-participant lets the researcher become familiar to those being observed, so that their behaviors, and the scene, are as unaffected as possible by the presence of the observer (Bernard & Ryan, 2010; Lindlof & Taylor, 2002). Lindlof and Taylor (2002) assert that the validity in participant observation is a result of the researcher “having been there” (p. 135, emphasis in original). Observations were recorded through the use of handwritten field notes, in which I recorded not only information about the content and the activities of the
class (as a participant who was “taking notes”), but also information about interactions between students and notes on my interaction with the study participants.

The differences distinguishing participant observation from onlooker observation involve the levels of interactivity of the researcher in the research setting. As Patton (2002) notes, in observation “the extent of participation is a continuum that varies from complete immersion in the setting as a full participant to complete separation from the setting as spectator, with a great deal of variation along the continuum between these two end points” (p. 265). Further, he notes that the degree of participation may change as the study progresses, with the researcher gradually becoming more or less involved as the fieldwork progresses (Patton, 2002).

In my engagement with the class as an observer, I was not a distanced spectator, but I was also not a fully immersed participant. I was a participant to the extent that I was “engaged in experiencing the setting while at the same time observing and talking with other participants” (Patton, 2002); however, I did not take part in the small group activities, though I could see and hear what was taking place within the small groups, and I did not complete the complete the written assignments for the class. I did read assigned material planned for discussion to allow me to better follow the conversation of the class. The students (those who were study participants as well as the others) were all aware of my presence and my purpose for being in the class. During whole class activities and periods of instruction, I sat among the students, although I only spoke if the class instructor or a student directed a comment or a question to me, which happened occasionally as the students became more comfortable with my presence. During small group discussions and activities of the class, I became more of an
onlooker, sitting outside the group arrangements and taking notes. Although I was immersed in the setting of the class, I remained at all times aware of my role as an observer conducting research. While I interacted with the students before and after class, and during transitions between activities, I “interfered” in the class only to the extent that I was invited as an organic part of discussion. (For example, as previously noted, I spoke out during discussion only when a comment or question was specifically directed to me.)

For the most part, the students in the class seemed to either 1) view me as another student with whom they were comfortable, or 2) not notice my presence at all. As previously noted, students tended to select seating in the same area of the classroom during each class meeting. Because the majority of the study participants congregated in the same “quadrant” of the classroom, I also generally took a seat in that space, as it allowed me the best vantage point from which to see and hear those students I was most interested in observing. Students in closest proximity to me (both study participants and non-participants) became very comfortable with my presence, addressed me by my first name, and did not seem to alter their behaviors based on my being there. On several occasions, I observed students engaging in off-task behaviors (such as interacting on Facebook), activities they quickly ceased when the instructor was nearby, but they were unconcerned that I could clearly see what they were doing. I developed a good rapport with these students, who seemed to trust me. Students who sat in other areas of the classroom seemed simply not to notice my presence, and I had little to no individual interaction with them.

With the participants’ and instructor’s permission, I was an onlooker for the conferences involving study participants conducted in the Learning Commons. The students
and the instructor talked through the students’ plans for their videos, discussed the interviews they had conducted or planned to conduct, and viewed any already-recorded segments of video. As an onlooker, I took notes on the ideas that the students shared, as well as on the feedback the instructor offered. Following the conferences, I asked the instructor if the students behaved during the conferences I observed in a manner typical of their behavior during other conferences in which I was not present, and she indicated that the conferences were very typical.

Screen Capture Recording

For this study, each of the six participants was provided with a copy of the appropriate Camtasia software for his or her computer platform. Maryam, Catherine, Amanda, and Elena all owned laptops running on a Windows platform, and they received copies of Camtasia Studios for Windows. Tyler and Morgan both owned Apple Macbook laptops, and they were provided with Camtasia for Mac. Students loaded the software on their laptops, and were provided instruction in how to record a full-screen screen capture recording, as well as how to process recorded video for export. Students were asked to begin recording each time they were working on their digital autoethnography projects, and to record for the duration of their work time without stopping the recording if they shifted briefly to another activity (for example checking email or Facebook).

I experienced widely disparate levels of success in obtaining screen capture recordings from participants. The most diligent participant, Tyler, recorded and shared twenty screen capture videos over a period of twenty-two days, amounting to roughly fourteen hours and eleven minutes of recorded work time. Other students were either less
diligent, or experienced technical difficulty that resulted in far less screen capture data.
Amanda submitted a single screen capture of one hour, eleven minutes, and forty seconds in
duration. Morgan submitted a single recording lasting forty-one minutes and fourteen
seconds. Maryam submitted two screen capture recordings with a combined recording time
of twenty-nine minutes and four seconds. Neither Catherine nor Elena submitted any usable
screen capture data. Catherine believed she had exported and submitted her screen captures
correctly, and before checking with me, she deleted the files from her laptop to regain the
space on her hard drive. Unfortunately, she had not processed the video for export, and the
raw data that she sent was unplayable. Elena reported a “computer crash” that resulted in the
loss of her screen capture recordings. Thus I have much less complete, or no, data of this
type for these participants. Reliance on participants’ use of the technology for data collection
is an acknowledged limitation of this study, and represents one real drawback of attempting
noninvasive, naturalistic study. Outside of a laboratory setting, and short of following
students to their dorm or to the library to observe their work and to remind them to turn on
the screen capture software, it can be a challenge to gather more complete data in a
naturalistic setting.

Interviews

While Geisler and Slattery (2007) point out that screen capture methods avoid the
distortion of think-aloud protocols, they concede that screen capture data is still incomplete
(p.197). Screen capture recordings offer evidence of what takes place during a period of
composing activity, but to address the why question, such data must be supplemented with
data gathered through other methods (Geisler & Slattery, 2007). Specifically, they
recommend diaries, video recordings of the workspace, inductive analysis, and interviews. They suggest interviews as the “most important supplementary data-collection method” available (Geisler & Slattery, 2007, p. 187). Interviewing is described by Lindlof and Taylor (2002) as a common method for an observer-as-participant study (Lindlof & Taylor, 2002), and thus is a likely companion to observation. For this study, formal, semi-structured interviews were conducted after students had completed their digital autoethnography projects. The purpose of these interviews was to allow participants to reflect on the processes and activities involved in composing their videos, and to elaborate on what they had written in their reflective essays about their processes. The interviews provided insight into the students’ individual actions, thoughts and perceptions about the processes involved in composing and about the project as a whole that were not visible to me or were not captured through other means of data collection. For example, although the interviews covered some of the same information students wrote about in their reflective essays, they also shared frustrations and confusions with me that they were not willing to share with the course instructor, the primary audience for the reflective essay. As a result, I gained a more complete view of the students’ actions, thoughts, and perceptions than could be gained without the interviews. Because these interviews were not conducted until the conclusion of the project, I had an established rapport with the students, and the interviews, despite being formal, were friendly and conversational.

The interviews involved a variety of descriptive, structural, and contrast questions, as defined by Spradley (1979). Descriptive questions are those that ask a participant to describe something in their own words. Asking descriptive questions is a useful means to discovering
other questions that might need to be asked. Students were asked to describe the processes involved in completing the digital autoethnography video. Structural questions, by contrast, allow a researcher to discover “how informants have organized their knowledge” (Spradley, 1979, p. 60). For example, each participant was asked about the different types of decisions he or she faced while composing the video. Contrast questions allow the researcher “to discover the dimensions of meaning which informants employ to distinguish the objects and events of their world” (Spradley, 1979, p. 60). Such questions allow the participant to define something in terms of its contrast with something else. During each interview, I asked the participants to compare the process of composing their digital videos with the process of writing an essay.

Individual interviews with each participant were conducted in the week following the culmination of the project, and each interview lasted approximately thirty minutes. During the interviews, I took notes relative to the participants’ responses. Interviews were audio-recorded using both the “TagPad” application for the iPad and a digital voice recorder. (Two recording methods provided backup as well as the improved likelihood of a clear recording.) Each participant was made aware that the interviews would be recorded, and each provided consent. Interview recordings were subsequently transcribed using verbatim transcription for analysis.

There are weaknesses and limitations to the reflective interview approach for collecting data (Tomlinson, 1984). Reflective interviews rely on memory, and therefore are reconstructions of the thinking and decision-making taking place during composing rather than a true picture of that thinking. However, unlike methods of data collection that capture
thinking “in the moment,” such as think-aloud protocols, reflective interviews are not intrusive. Further, when combined with observation (in-class observation and screen capture) and artifact analysis, these different sources of data allow the researcher to “validate and cross-check findings” through triangulation (Patton, 2002, p. 306).

Work Samples

In addition to observing, screen capture recording, and interviewing, I also collected artifacts of the students’ work at various stages in the project. On the first day of the projects, I captured photographic recordings of the students’ brainstorming lists of their groups. In the fourth week of the project, I captured photographic recordings of the students’ storyboards, which they displayed around the classroom gallery style. Other students had responded to the storyboards by writing comments on post-it notes and adhering the post-its to the storyboards. In the final week of the project, I collected digital copies of the students’ final digital autoethnography videos and their reflective essays. The brainstorming lists, storyboards, and final videos were used primarily to prompt reflection in the interviews, while the reflective essays were coded as data in themselves.

Data Analysis

The primary and secondary research questions in this study focused on the processes and activities students engaged in when composing a multimodal composition, as well as the rhetorical decisions students made while composing and their methods for navigating technologies. The data collected represented naturalistic texts generated within the context of a single multimodal project. This section will explain how the data resulting from the observations, interviews, reflective essays and screen captures were analyzed.
Previous research into writing processes has shown clearly that no single, codifiable, generalizable writing process exists. Scholars such as Cooper (1986) and Kastman-Breuch (2003) resist discussing writing processes at all, and, instead, refer to writing *activities*. Because composing processes are not uniform between people or between projects, it is important to initially consider the data gathered in this study as separate and unique to the individual participant. Therefore, I initially assembled and organized the data into individual case records, treating each as a micro-case study for analysis nested within the macro-case of the digital autoethnography project in this single first-year writing course (Patton, 2002). Of the case study, Robert Stake (1995) says

A case study is expected to catch the complexity of a single case. The single leaf, even a single toothpick, has unique complexities—but rarely will we care enough to submit it to case study. We study a case when it itself is of very special interest. We look for the detail of interaction with its context. Case study is the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances. (p. xi).

It quickly became apparent after assembling and organizing the transcribed data that one student’s record was far more complete than the others. This student, Tyler, is the student who provided the most complete screen capture data. As such, his case was identified as the primary case for in-depth screen capture analysis. Data gathered through observations, interviews, and the written reflections of all of the participants was considered separately from the screen capture data.

To translate Tyler’s screen capture videos into data that could be coded, each video in
Tyler’s case record was viewed in real-time playback, with replaying as necessary. While viewing, I analyzed and took notes in the form of analytic memos based on the activity on the screen, following the approach for analytic memo writing suggested by Clarke (2005) and Geisler and Slattery (2007). Although analytic memo writing is often seen as “the transitional process from coding to the more formal write-up of the study” (Saldana, 2013, p. 50), Clarke (2005) advises that when working with visual materials, analytic memo-writing is the critical first step. These analytic memos, or notes taken by the researcher on what is seen in the visuals, become the texts for coding. These analytic memos included what Geisler and Slattery (2007) refer to as “first-order phenomena” and “second-order phenomena.” They explain that “first-order phenomena address the question of how the writer is doing what she is doing rather than higher-order questions of what she is doing or why” (Geisler & Slattery, 2007, p. 194 emphasis in original). First-order phenomena include the time when the operation begins, the artifacts or texts involved, the operation carried out on the artifacts, and the tool or tools being used, including hardware and software. Second-order phenomena require drawing inferences by combining information across the frames of the video. Second-order phenomena address what the writer is doing, and include the duration of the operation, specific actions carried out, breakdowns in the action, transitions between artifacts and emerging artifact ecologies (collections of artifacts used together for an action) (Geisler & Slattery, 2007). Although Geisler and Slattery (2007) do not mention the transitions between tools or emerging tool ecologies in their discussion of second-order phenomena, I also took notes on these as they emerged from the data. The results of the data gathered through Tyler’s screen captures appear in chapter four.
My process of data analysis involved an inductive analytical approach (Kamberelis & de la Luna, 2004; Patton, 2002) to discover themes and categories within the data and to draw conclusions from this study. After interviews and field notes were transcribed, I reviewed the transcriptions as well as the students’ written reflections, and identified complete thoughts within phrases, sentences, and paragraphs that related to students’ actions of composing and navigation of the technology, and the influences on their invention and decision-making related to their compositions. These phrases, sentences, and paragraphs were identified as the units of analysis. I copied and pasted each unit of data into a table, along with an identifier that would allow me to match the data with its source, and added comments when necessary to provide contextual information. I subsequently printed the table on card stock and cut it into separate strips, one strip per unit of data. Data were coded utilizing inductive coding with attention to repetition, and constant comparison for similarities and differences (Glaser & Strauss, 1967). I developed a coding schema from this process and I formally coded the data in the table according to the coding schema. Two themes emerged from these data, “acts of composing” with categories describing specific actions and operations of composing (what students did) and “influences on invention” with categories describing the contextual influences on students’ decisions and actions (why they made the choices they made). To offer an example of the coding, any references to “trial and error” were coded as “learning to navigate the technology—trial and error” under “acts of composing,” while any references to using sources as an aid to discovering an argument were coded as “intertextual influences—sources” under “influences on invention.” I followed a similar process to code the data from Tyler’s screen captures. However, instead
of utilizing the “low tech” approach of identifying units of analysis, cutting them into strips, and physically sorting them by hand, I uploaded the analytic memos into the online data management and analysis program Dedoose. I reviewed the data in Dedoose, and identified operations and actions\(^\text{10}\) of composing related to invention and decision-making as well as operations and actions of composing related to assembling the video. For example, the action of conducting a Google images search for an image to use in the video would be coded as “searching for visual material” within “invention and decision making” while the action of adding that image into iMovie was coded as “adding images” within “assembling the video.” I then used the same inductive coding approach to code this data. Through this approach, categories of data were identified and defined.

After the coding, I provided two independent raters with a 10% sample of the data to test reliability, and calculated inter-rater reliability using Cohen’s Kappa. Five categories emerged from the observation, interview, and written reflection data related to students’ actions of composing and navigation of the technology, and nine categories emerged related to invention and decision-making. Strength of agreement, with a 95% confidence interval, was “very good” in relation to the coding of these categories, at 0.823 and 0.925 respectively. From the screen capture data, three categories emerged related to invention and decision-making, while seven categories emerged related to actions and operations of assembling the video. Strength of agreement was also “very good” in relation to the coding of these categories, at 0.891 and 0.843 respectively, with a 95% confidence interval. Instances of off-

\(^{10}\) Geisler and Slattery (2007) identify operations as “readily identifiable and usually repeated tasks writers perform” (p.194). They identify “actions” as “constellations of operations, tool, and artifact that usually show up across multiple frames” of screen capture (p. 196).
task action were coded separately, returning a “perfect” strength of agreement at 1.0 with a 95% confidence interval. Chapters three and four report the results.
CHAPTER THREE: RESULTS FROM OBSERVATION, INTERVIEWS, AND STUDENTS’ WRITTEN REFLECTIONS

In this chapter I discuss the findings from the data collected from all six of the study participants through classroom observations, interviews, and written student reflections. Explanations and supporting examples are offered for each of the categories that emerged from the data. I have divided these data into two sections: acts of composing and influences on invention. This division is based on the distinction between students’ specific actions and operations of inscription (what the students did and how they did it in terms of the inscripting of their videos) and those textual and contextual factors that influenced students’ decisions and actions (why they made the choices they made). This division also anticipates a discussion I offer in my analysis (chapter five) regarding acts of conceptualization and actualization as observed in these students’ processes. However, because composing processes are layered, integrated, and recursive, attempts to parse data into categories are often insufficient to capture the totality of these processes. Not only are influences and actions concurrently enacted, various actions and operations occur simultaneously. Acts of composing will be discussed first (the “how”), followed by influences on invention (the “why”).

Acts of Composing

Attempts to codify writing processes have, rightly, met with objections from scholars in Composition Studies. No two writers approach a writing situation in exactly the same manner. While no two participants completed this course project in precisely the same way,
the data reveal similarities in the specific activities and operations the students engaged in as they composed their videos. These activities can be categorized as

1) inventing, or “finding” the argument to develop in the video and planning for its development. Influences on invention—or the “why” of the students’ decisions—will be discussed at some length in the second section of this chapter. This section will discuss, somewhat more briefly, activities involved in invention.

2) assembling the video, which included creating and arranging the material, coordinating the various modal elements of the video, and editing;

3) navigating the tools of inscription (the technologies);

4) citing source material; and even

5) procrastinating.

Although necessity requires that I separate and “order” these activities to facilitate their discussion, I do not mean to suggest in this ordering that these activities occurred linearly. Rather, as is now conventionally accepted in process literature related to writing alphabetic text, these activities were enacted in a recursive fashion. For example, although most students began with activities meant to help them decide on their arguments (invention), they did not stop inventing when they began assembling elements into their videos. Additionally, at times, two activities occurred simultaneously. For example, while engaged in the action of adding a visual image to the video, which would be coded as an act of “assembling,” a student is also engaged in navigating the technologies.
Inventing

As McKeon (1987) explains, “invention is the art of discovering new arguments” (p. 59). McKeon’s (1987) term “discovering” to describe the art of invention is particularly apt in characterizing the participants’ activities early in their work on their digital autoethnographies. One of the earliest goals for students was identifying the argument that they planned to make in their videos, and nearly all of them described this as a process of “finding” an argument. Although data related to why students made particular choices and the influences on their invention will be discussed in the second part of this chapter, here I focus on students’ specific actions and operations as they sought to discover and develop their arguments for their videos. The category of “inventing” was used to code actions related to “finding” the argument and planning for the video.

Invention for this project involved developing a conceptual plan for the video. This included determining the textual, visual, and auditory content that would be necessary for various parts of the video. Decisions about content and modality were made largely on the basis of contextual and textual influences, and will be discussed in the second part of this chapter. The invention or “conceptualization” phase of work also involved giving early thought to arrangement in order to develop a plan for the video. Because this project was not an essay, students did not have a well-rehearsed organizational structure as a starting point for thinking about arrangement. Every participant reported engaging in activity that helped to plan or “map out,” the material he or she wanted to include in the video. This planning took several forms, described by participants primarily as either “scripting” or “outlining,” but also as “storyboard[ing].”
For Tyler, planning took the form of a script. In his written reflection, he indicated that planning the video “was by far the hardest part of the project,” an activity that “resulted in many rewrites, redrafts, deleting everything, and starting over from scratch on several occasions.” During his interview, while reviewing a segment of his screen capture, Tyler explained that it was important to complete a script as a guide for the production of his video. He felt that developing the video “would go a lot smoother if I had a plan to just base the video on rather than just ‘Oh I like this image. I’ll put this here.’” Although he referred to the script as “planning,” it took on the appearance of a draft as he wrote out paragraphs of text that he would later record as voiceover. He also included directions to himself about inserting interviews, images, and transitions (Figure 1). He noted, however, that the script was always a work-in-progress, one that changed nearly every time he worked on the video, either because he was not able to find an image that he felt “worked,” or because he found new information that influenced what he wanted to say in the video. This emphasizes the recursive nature of composing processes.
Amanda also reported developing a script, but only after she first started trying to record audio for her video and realized that she “had no clue” what she was trying to say. She was not able, in other words, to create the voiceover narration for her video without a clearer sense of the content needed in each segment of the voiceover. This may emphasize Amanda’s lack of experience with composing video that requires voiceover. With no prior experience in this type of composing, she did not understand the need to plan what she would say prior to beginning to record. She did not realize how much of an issue this would be until she tried to record without a plan. This emphasizes the non-linear nature of composing processes. Although Amanda had begun work on her video previously by adding images, she did not create her script until the Thanksgiving holidays, just before the videos were due on the following Tuesday. In her interview, she explained that she began the scripting process...
by writing down bits of information she wanted to include on different post-it notes (Figure 2). Later, she and her boyfriend used those slips of paper to draft a more developed script, though one she still described as being “in pieces.” In addition to writing out what she would say in the video, she “assigned pictures that went with it.” This was “a process that finally worked” to help her build her video.

Figure 2. A sampling of Amanda’s post-it notes used for planning.

While four of the six students engaged in activities of invention that drew on prior experience and that were not assigned in relationship this project, two students used processes that were modeled in class. These two students, Maryam and Catherine actively utilized a storyboarding activity completed for class in their planning, although they did not at first understand the activity’s usefulness. As a class activity, the students were asked to complete a storyboard in the early stages of thinking about their videos. The instructor
intended that the storyboards would help students think through ways to present their argument in multiple modes. Students practiced storyboarding through a group activity in which they first sketched out a “reverse” storyboard of a video clip shown in class, and later they developed a more detailed storyboard to remediate an audio-only segment of NPR’s *This American Life* into video. During this activity, the instructor encouraged the students to “Think both visually and verbally. If you’re saying ‘we’re going to talk about this,’ think about how you will show that visually.” Students then drafted their own storyboards for their autoethnographies. Four of the participants discarded their storyboards and did not make use of them in further planning or producing their videos. In their interview comments, the students reported that they did not find the storyboarding activity useful, either because they did not yet know enough about the technology they would use to create the video for the storyboard to be helpful, or because creating a video was so new to them that they were unsure of how to approach laying out the video. Initially, even Maryam described the storyboard as a “task,” an activity she completed because it was assigned and she was supposed to complete it as a part of the class. However, both she and Catherine, whose storyboards are shown in Figures 3 and 4, returned to their storyboards in later planning, and both found them useful in the processes of producing their videos.
Figure 3 Maryam's storyboard
Figure 4 Catherine’s storyboard with comments from her classmates

Because she was initially unsure of her storyboard, Maryam explained that she “filled out a generic outline” for her video to get her “thoughts on paper.” A “generic” outline, according to Maryam, is an outline “like you might write for a paper.” After completing this outline, she reworked and revised the storyboard that she had previously completed, and she continued to revise her storyboard as she worked on her video. Eventually she completed a reverse storyboard to “check on” her organization. Catherine also reported returning to her storyboard, and drafting the narrative that she would later record in voiceover for each frame.
Like Maryam, Morgan reported that she planned her video in rough outline form. Much later, after assembling the images and sound for her video, she translated this outline into a script that she read for the voiceover.

Elena was the only participant who did not discuss engaging in planning activities. In her interview, she explained that she always works on projects without much advance planning and organization. Instead, she just begins to work. Like many of the participants, she compared her processes in working on this video with her process of writing a paper. She explained:

Because when I write a paper, that’s really what I do. I sit down and I write a piece at time. Because sometimes you can’t get an introduction…so you start somewhere else. Or you have a really good conclusion, so you write that out. And then you put it all together and you read it and fix it. And… because I can’t plan – I can’t sit down and write a plan and then write. I have to start writing and then fix what I wrote.

Although Elena did not believe that she actively engaged in planning, her comments suggest that she had to some degree formulated a plan for her video, even if it was not a “formal” plan and existed only in her head. While working on her video, Elena had some notion of her desired product that she used to measure the success of her work in progress. Just as she discusses “fix[ing]” her writing once it is on paper, she discussed evaluating whether or not aspects of her in progress video “worked.” Such evaluation would not be possible without some prior concept of what was desired.
**Assembling, Arranging, and Coordinating**

Armed with a physical plan for their videos (or not, in Elena’s case), at some point students entered the actualization, or production phase of their composing. This work very much resembled Jasinski’s (2001) description of the rhetor as a “bricoluer—a person who acts by making do or improvising with the limited materials that are available in a particular situation” or as a “tinkerer pasting together bits” of material “to meet the demands of the occasion” (p. 329). Students engaged in four actions encompassed in this category: assembling the various elements of their videos, including images, video clips, and for most, music, which might involve creating those elements or uploading them; arranging or organizing those elements; coordinating the different modes of the video; and editing. It is very difficult to separate these three activities as they occurred simultaneously and recursively throughout the students’ work composing their videos. The students affirmed that adding material into the video for the first time (assembling), shifting material around within the video (arranging and coordinating the modal elements), and making adjustments to the timing, video and audio effects, and transitions (editing) were activities that occurred repeatedly as they worked.

Of these activities, the initial assembling of the elements into the software program was described as the most simple. Tyler explained that actually uploading the various elements into the video software was relatively easy for the students because those actions were similar to uploading material to Facebook or other applications the students used frequently. Amanda agreed, saying “I think…the adding in the music and the pictures, I think that was not very difficult and just another thing to do.” In addition to images, music, and
interview footage, each of the students included narration. They either used the video software to record voiceover narration, or, in some cases, they used other programs such as Audacity or sound recorders built in to their laptops to record the narration, which they then uploaded into their videos. In her interview, Elena explained assembling and arranging the parts of her video was like putting together a puzzle, trying different pieces to see where they fit. Her description mirrors what each of the participants had to say about testing various ways to arrange the elements.

It was like… it was like a jigsaw puzzle. I was like, this is here, this is here, this is here, and this is here. Let’s see how that works. I hit the play button. No. Let’s move this here, this here, this here, this here. Hit the play button. Almost. Let’s shift this and this, add this in here, add that in here. Hey, look that works. Now let’s add some music and narration. Honestly, I just shifted things around until it worked for me. With the audio, there were 2 parts. There was the music part [and] there was a narration part that appeared as green – a green sound strip and a tan sound strip. You had to realize how to cut, split something. How to create a stop point at any point. And where I wanted it to start and how far I wanted it to stretch out. And then… and after that, that was pretty much easy to put it all together.

In this description, Elena begins to discuss the activities of arranging and coordinating the various modal elements of their videos. As simple as the participants felt that it was to get their material into the program, and as casually as Elena describes the work, it was precisely with this need to coordinate the disparate modes that some students began to experience frustration. Tyler and Elena both articulated the difficulties of coordinating the audio and the
visual elements of their videos. Tyler asserted that “the most time consuming” part of the project was working out the timing between these modes, a claim that is supported in his screen captures (discussed in chapter four). Though all of the participants began their assemblage with the visual elements of the video—mostly still images—they soon believed that it would have perhaps been easier to begin with the audio portions, including their voiceover and any music they intended to use. They learned that while you can quickly and easily adjust the length of time a still image appears on the screen in a video, you cannot as easily adjust the length of recorded narration or the length of a song clip. In his written reflection, Tyler wrote:

It would have been far easier for me to record the audio first and then add the pictures later. However, because I did it the other way around I had far more work cut out for me. I found that adjusting the clips for where the audio was took a lot longer. I did not have nearly enough images and had to go search the Internet in order to fill in several of the gaps where there were no images but plenty of audio. This part took the longest and was very time consuming.

Students reported they were not able to accurately predict the length of time it would take to read bits of their script resulting in having either too few or too many visual elements to accompany the narration. Asked to discuss this more in his interview, Tyler explained

Like as I read through [the script] I’d say okay I’ll put in this image to match that and I went all through and after I recorded [the narration], I found that the image and the audio didn’t meet up at all. Like I would say something and then the image I wanted to go with that statement was all the way, like at the end of the paragraph, like I had
to go back and rework a lot of stuff and take…and trash some stuff and it was just a mess. I could’ve been like okay I want this image to go here and just put it there. Instead I had to kind of move stuff around.

The “moving stuff around” proved more challenging than any of the students anticipated, because, as they learned, when one element was changed, it affected everything. Elena described this issue in her interview:

It was frustrating trying to make it time out correctly…to where your pictures matched your audio because still on my final cut, it didn’t match perfectly. Like there were times where I couldn’t just get it just right. At one point I had finished the video and I was like, I don’t like this and I just broke it all down and relocated everything. I had to wipe out all my audio, because whenever you shifted a picture the audio would shift, and then you’re like, wait, this is off. And there was no point in resetting it if you had another piece you had to move, because it would just move it all over again.

The line between this revision work—reorganizing and coordinating the modal elements—and what the students described as “editing” which they defined as making final adjustments to the timing, effects, and transitions, was indistinct. Students made editing adjustments throughout their work on the video, only to later reorder something and need to edit again. Further, this work continued until the project was due. Morgan explained that she never got to a point where she believed her video was finished. Instead, the due date arrived and she simply had to stop working. The other students expressed similar ideas. Of course, working up to the deadline may certainly occur when students are composing alphabetic text essays, as well.
Navigating the Tools

One major difference between multimodal composition in a digital environment and the writing of more traditional academic essays frequently assigned in first-year writing classes is the need to utilize a wider variety of technologies in the composing process. This category is used to describe any actions that students engaged in to learn to use the necessary technologies or to troubleshoot a problem with the technology.

As mentioned previously, the course project observed for this dissertation required students to use either iMovie (for Mac users) or Windows Movie Maker Live (for PC users) to compose a video integrating image, interviews, and voiceover narration at a minimum. Although several students stated in their background surveys that they had used these or similar programs, in the final interviews none of the student participants reported ever having used these programs for this type of project. Students learned to navigate the technologies in several different ways, including participation in the in-class workshop, trial and error, and seeking additional help from any number of outlets. They also learned to problem-solve when unanticipated issues arose.

Formal Training on the Software

In the third week of the project, an Emerging Technologies librarian visited the class to present a workshop on moviemaking software. Initially, the workshop was to be held in the digital media lab of the library; however, a scheduling conflict meant the workshop had to be conducted in the flexible classroom. Also, the original concept for the workshop was to introduce both iMovie (the Apple software) and Windows Movie Maker (the Microsoft, PC software). The presenter did not feel that one class period offered adequate time to cover both
platforms, and the decision was made to discuss iMovie only. The presenter did indicate that the programs were “similar,” and that understanding the basics of one of the programs would be useful for working in either program. The presenter offered a handout on library resources related to the project, including links to tutorial videos on Movie Maker, and walked through the processes of inserting and manipulating images, uploading and “clipping” (or excerpting) video, adding audio, and recording voiceover in iMovie. He also discussed adding transitions and exporting a completed video.

Participants found the workshop useful. Morgan “felt like the tutorial was really good,” and Elena commented that “the way the library executive explained iMovie really broke it down and made it seem very simple.” At the same time, these participants did not believe that the instruction offered was adequate for the scope of the assignment they were asked to complete. Morgan explained “If we’re expected like to create something that’s like 20% of your grade – like one in-class workshop – I feel like it’s not enough to really make students feel comfortable with, you know, a program they’re not used to.” While Elena thought the workshop was informative, she took issue with the fact that no actual instruction was offered for students who needed to use PC software. In her interview, she expressed

when I found out I would have to use Movie Maker I was a little bummed, because the dude came in there and only showed us that we were only using it for Mac. And I was like, I do not have a Mac.

Other students had similar concerns. Catherine felt that the workshop introduced the students to a program (iMovie) that had far more capability than the program she would use as the owner of a PC (Windows Movie Maker). She acknowledged that had she had a similar
introduction to the program she would be using, she would have perhaps learned that it had the same features. However, because she was left entirely on her own to learn the program, she did not believe the program was as robust or easy to navigate. This issue with the workshop led to frustration for all of the students who were using Windows Movie Maker, including not only Elena and Catherine, but also Maryam and Amanda (although Amanda later abandoned Movie Maker and completed her video using Camtasia). Maryam explained that her frustration stemmed from having really good ideas for her video based on the in-class iMovie workshop, but once she began to work in Windows Movie Maker she realized she did not know how to develop those ideas within the software she was using. The students were offered the opportunity to use a library-owned Macbook with iMovie, but all of them saw this as an added level of complication for an already overwhelming project. Composing the videos was a time-consuming process, and the limits on checking out the library computers posed a hardship. Students were also concerned about storing and saving their work. Elena explained that if she were to use a library machine, she would fear losing her work, because she would not be able to save the video-in-progress on the hard drive, and she was uncertain about saving it on portable media such as a flash drive. Finally, because the videos were due the Monday after the Thanksgiving holidays, the students knew that if they were relying on a library-owned computer to complete the project, they would not have the benefit of the five day holiday to work.

**Trial and Error**

Regardless of the computer platform or program the students were using, each participant suggested that learning to use the program required a lot of “figuring things out.”
Every participant noted approaching various actions in the software through trial and error. Students handled this in different ways. Morgan believed that introducing her group was a significant part of her video, and she worked on that opening segment before she did any other work on the project. Working through composing the group introduction required that Morgan investigate the different features of the software. She explained

I spent a lot of time working on [an intro to her group], and so through that I was able to explore a lot of my options in iMovie, because it’s a program I’d never been able to use before. And that took forever. That took so long. But I guess it was worth it, because I kind of… I know the ins and outs of iMovie pretty well now.

Other students postponed their use of the software until their videos were mapped out, but the process of learning the program still involved figuring out the means to achieve the desired result. Catherine claimed

the entire process was nothing but trial and error and trial and error and trial and error. I just figured out how to use the program, and then once I got it figured out I wrote down on a piece of paper exactly what I wanted to do, and then I put it together.

Elena and Amanda also said that learning to use the software was largely a matter of figuring it out by trying various things until something worked. Tyler felt that once he figured out the basics things “moved very quickly,” but he noted that some operations “took a lot longer to learn” than others.
Maryam acknowledged that surprises came along with learning to use the software and getting the results that she wanted with her video. One specific example she discussed involved recording voiceover narration. She stated

I had never tried narrating a video before so I did not realize all the little things that could potentially go wrong when attempting to narrate. Factors such as my paper rustling, my head turning away from my computer, and the tone of my voice all seemed to affect the quality of my narration. It took me a few tries before achieving a narration that I thought was suitable for my video.

From the simple actions of recording narration to more complex actions of splicing audio, one of the two primary methods the students used to navigate the software was simply getting into it, “tinkering” with it, and figuring it out.

Seeking Help

Another noted method of learning to work with the software was the action of seeking help. Students sought help from any number of resources, but most often from YouTube. Amanda explained that for any question she had about the software, she was able to find a YouTube video that explained what she needed to do. Maryam also turned to YouTube for “how to” help, but said that the program (Windows Movie Maker) “was still kind of hard to get used to, because sometimes it would do things you weren’t expecting it to do.” Both Catherine and Morgan reported that they “Googled” issues they were having and were always able to find answers that were “generally helpful” (Morgan), though Catherine expressed that this “took extreme patience.” She explained that she spent five hours one day Googling for information, reading the information, and trying to figure out what the
information was telling her she needed to do. Elena turned to online tutorials offered by the university library, and initially she found those useful, but as the work in the video became more complicated so, too, did the tutorials.

   Students also sought help from peers. Maryam explained that the students in the class who were using Windows Movie Maker all tried to help one another, but everyone was equally uncertain about how the software worked, and therefore asking one another proved to offer more moral support than actual help. She noted this support was important, though, so that no one felt like they were alone in trying to learn the program. Both Catherine and Amanda reported receiving help from their boyfriends. Though neither boyfriend had experience with the program, both noted that the boyfriends were more willing to try things out, and got frustrated less easily since “it wasn’t their grade” (Catherine). Having their assistance was not only helpful but also calming.

   Only one participant, Amanda, mentioned seeking help from the librarians, despite the fact that the emerging technologies librarian who conducted the workshop encouraged students to email him with any questions. Amanda shared that she sought the help of library staff only when it was time to upload her video to the file sharing service, because she was not sure what she needed to do to export her video into a format that could be uploaded. Amanda commented that when seeking help from the library, results were much less immediate than looking up information on YouTube or Google, and because she was not able to anticipate her needs before they occurred, this was not an efficient method for obtaining help.
Problem-solving and Troubleshooting

The ability to problem solve emerged as a significant skill related to the students navigating the technology. Problem solving was required when something unexpected occurred or troubleshooting was necessary in the students’ work on their videos, and students were generally able to come up with a solution.

Tyler, who was working in iMovie, experienced a problem with the processing on his Macbook slowing down. He learned that running too many programs at one time was partly to blame for this, and he tried to keep the number of applications open on his computer to a minimum when he was working on his video. This was a challenge, though, because he needed access to his script (in Microsoft Word), his developing video (in iMovie) and Google Chrome (where he searched for images to incorporate into his video) at the same time. Additionally, he was running Camtasia in the background to screen capture his work as a participant in this study. (Although he did not mention it, he was often running YouTube in the background as well; this will be discussed in chapter four.) After searching the Apple computer “app store,” he learned of an application that he could download onto his iPad that would allow his iPad to function as a dual monitor. Not only did this help him to keep the needed work in front of him at all times. This also helped him to avoid the noise of shuffling papers or clicking from screen to screen as he recorded his voiceover, an issue that was noticeable in some of the student videos. In his interview, he explained

I found out that there’s an app for it [the iPad] called Air Display, where pretty much you just turn on the Air Display, and then you have a second monitor right there where you can drag stuff onto. And that was invaluable when it came to just
recording, where a lot of people… like you could hear them flipping through their pages on their actual recording on the video. I didn’t have to worry about that, because I could just drag it [the script] over here [to the iPad], talk into the mic, but be looking at my iPad just right in front of me. And now… I mean, that was the… pretty much the best thing I could have done. […] I would use images, where I would have the image thing up on the side [on the iPad], scroll through it, figure out where I wanted to download the image, and then just drag it over [to the Macbook]. Rather than flip through different windows. It was a major time saver.

While Tyler’s discovery was a useful time saver, other participants ran into compatibility issues that could have derailed aspects of their videos completely had they not engaged in problem solving. Elena recorded interview footage on her iPhone. However, she was not able to download the video from her iPhone straight to her PC. Initially, she attempted to email the video files to herself, but the file size posed a problem. Therefore, she plugged her iPhone into a friend’s Macbook, and moved the video files to a flash drive, and was able to then transfer those files to her PC. Catherine experienced a similar issue attempting to import interview footage that she recorded on her cell phone into Windows Movie Maker. She learned that the format of the video on her phone was not compatible with the software. After researching the problem on Google, she learned that there was a codec issue. She was able to download a video converter, ImTOO3gp, that she used to convert the video files into a format compatible with Movie Maker. This converter “saved [her] project.”

11 “Codecs” either encode or decode digital data so the data can be read by various software applications.
Prior to encountering this issue she had never heard of codecs or issues with encoding and decoding digital data.

In her interview, Maryam astutely stated that any time a person is working on something that is new and different, “Some things… I mean some things are going to come up that you weren’t really planning on” and therefore she felt this project helped her learn to problem solve. She encountered several issues with audio for her project, but was successfully able to solve each of them. The first issue involved recording voiceover narration. Maryam was unable to figure out how to record voiceover narration in Movie Maker\textsuperscript{12}. To troubleshoot this, Maryam simply found an alternative way of recording the audio using another program on her computer and uploading it into Movie Maker. She also shared an issue that she encountered trying to include both voiceover and music, and adjusting the volume of the two separate audio tracks. She explained

I didn’t know that you couldn’t put like 2 audio files on top of each other. […] when we had the library instructor come in and show us how to use the Mac version, you could do that. Like you could put your voiceover with maybe some music and just alter the volume. But with [Movie Maker] you couldn’t, so…you just had to problem solve.

Maryam shared that she believes the attitude of problem solving that she honed while working on her video will be useful in other classes including those in her major, biology. Unlike some of her classmates, who became anxious and frustrated when faced with a

\textsuperscript{12} The program has this capability, but it is somewhat hidden in a “Timeline” menu in the program. Several of the students had difficulty finding this capability.
challenge, Maryam was remarkably calm, sharing that “in the end, like it worked out, so I mean it taught me to just—with things that are out of your hand—like I couldn’t really do anything about it – so just relax.”

_Crediting Sources_

Determining how to cite source material and images within their videos was an additional process activity that the students engaged in while working. Students recognized they needed to cite material from their printed sources, but were unsure how to incorporate in-text citation within their video. In her progress conference with the instructor, Morgan shared a segment of video she was working on, and she and the instructor discussed the citation for a quoted definition from a print source. After viewing the video segment that included the quotation, the instructor responded “your citation is in a parenthetical citation showing on the screen. How do we normally see this done in documentary style videos?” At the end of the conference, Morgan re-examined the sample videos shared in class to try to determine how to cite her source, and she ended up “speaking” the citation as a signal phrase in her voiceover. In his written reflection, Tyler expressed how he had to continually remind himself to record the citations for images he pulled from the Internet. He accomplished this by simply copying and pasting the URL for each image he used into a Word document, and later adding that URL to the screen in his video. Students described the need to cite as “taxing” (Morgan, interview) and “tedious” (Catherine, interview), though they recognized it was something that they needed to do. In her interview, Morgan explained that as she was assembling her video, she
put in a lot of photos. I didn’t realize how like citing that would suck at the end. […] that’s something like I’ve never done before, too, so I didn’t expect that. So that was like a good learning process, I think.

She noted that if she was to do this sort of assignment again, she’d take more care to maintain the citations for her images as she worked, rather than have to retrace them at the end of the project. Tyler shared a similar frustration, saying that “2 minutes before the thing was due” he was still working on his citations.

Procrastinating

An interesting category that emerged from the interview and written reflection data is that of procrastination, which, based on the students’ comments, in part seemed to stem from technology anxiety, and in part from misconceptions about how easy the project would be to complete. It is interesting to consider the students’ perceptions of their procrastination and its effects on their processes and their work. Several students believed that composing the video was going to be “easy,” and only after getting involved in the processes of arranging, coordinating, and editing did they realize the level of effort involved. Tyler commented in his reflection on the time required to compose a video.

I discovered something about making videos. They took far more time than anyone I had talked to in the class had thought they would. Nearly everyone had assumed that making a video would be a much easier project, however we all could not have been more wrong.
At the end of the project, Tyler had just under fifteen hours of screen capture from work on his video, and he did not remember to capture each work session. (The results from this screen capture data will be shared in chapter four.)

Although Morgan did not put off all of the work on her video until the last minute, she did assume she would be able to get more done in a quicker period of time than she was able to accomplish, and she also found herself scrambling to finish her video over the Thanksgiving holiday. Because the university was so far away from friends and family, she was upset and frustrated that so much of her holiday needed to be spent working on her project. As a result, she recorded her voiceover at the very last minute. In her interview with me, she explained “I literally did the voiceover at like 5 in the morning the morning before” the project was due.

Elena also expressed an early misconception about the project in her written reflection, stating “at first I thought this video was going to be all too easy, but I slowly realized that making the video was going to be a lot harder than I perceived.” Elena was one of the three participants who admitted that procrastination effected her process. She put off work on the video in order to prioritize other academic demands, because she believed she “could do it [the video] over the [Thanksgiving] break.” When she experienced computer issues while working on her project over that break, however, that led to stress and a general feeling of negativity about the project.

Both Catherine and Amanda indicated they put off work on the project out of anxiety. Catherine, who admitted she often procrastinates and believes she “can’t do anything without pressure,” stalled on this project more than usual. She explained “I am not technologically
inclined by any standards and I put using the program [Windows Movie Maker Live] off for quite some time because it seemed very ominous to me.” This procrastination resulted in frustration when things did not go as smoothly, easily, or quickly as she’d hoped. Amanda also postponed her work on the project because she did not feel like she knew what she was doing with the technology. Only at the last minute did she really devote much time to work on her video: “And then it got to be like the weekend of Thanksgiving and I realized that I didn’t have anything fully put together, and it was due that Monday.”

Although it may be true that procrastination is a part of the culture of some college students, who put off assignments until the last minute or brag about “pulling all-nighters” to “cram” for exams, student procrastination within this project seems to have two identifiable causes in addition, perhaps, to the regular tendency to delay work. Students underestimated the time required to compose a video, and some felt true anxiety over the need to work with unfamiliar technologies.

This section of the chapter has focused on the participants’ specific actions and operations of inscription as they composed their videos (RQ 1), addressing the questions of what they did and how they did it. This included a discussion of the students’ means of navigating the technologies as they composed (RQ 1b). In the section that follows, I offer discussion of those textual and contextual factors that influenced the students’ decision making and their actions, focusing on the question of why they made the choices that they made as they composed (RQ 1a).
Influences on Invention

Data emerging from this study offer evidence for the social nature of invention (LeFevre, 1987) in which the writer is part of a community, a socioculture, a sphere of overlapping (and sometimes conflicting) collectives. It draws our attention to social contexts, discourse communities, and political aims. It reminds us that writers invent […] not only alone but with others with whom they must work or with whom they choose to think. (p. 93)

Invention, when understood in this social perspective, involves any number of factors that influence the writer and the resultant text, and this is certainly the case for the participants in this study. Although students did not refer to their actions as “invention,” nor did they identify the “influences” on those actions, discussions of invention and the influences on invention were nonetheless prominent in the data. Every student recognized the need to determine a thesis as a necessary activity early in their work on the project, and every student discussed how they made choices regarding the development of their videos. Much of their conversation centered not on what they did, but rather on why they made particular decisions and choices. Their comments bear witness to the complex decision-making processes discussed by Shipka (2011).

This section examines the results emerging from the data that illuminate why and how students made various decisions about the content and form of their videos, and traces the influences on their decision-making. Nine categories emerged from these data, including

1) Exigency and assignment limitations,
2) instructor influence,
3) purpose and goals,
4) intertextual influences,
5) influences on modal choices,
6) audience expectations and the dialogic influence of the expected audiences,
7) limitations of the tools of inscription (in this case, the software),
8) interactions with others about the emerging text, and
9) the students’ perceptions of the project.

Categories are discussed in the order they emerged in both the students’ written reflections and their interviews. It is important to remember that the composing processes reflected in the data were framed within the context of a first-year composition course. As such, it is expected that some of the categories of influence would not generalize to composing processes outside of that context, perhaps not even to another classroom with another instructor. However, these data are important because they raise our awareness of students’ composing processes and highlight other questions for further exploration.

*Exigency and assignment limitations*

Prior (2004) argues “a key issue in tracing the process is how a text gets initiated” (p. 168). In the case of this research, the exigency initiating the digital autoethnographies was the assignment, a class project in the context of a first-year writing course. This initiation is not only a part of the processes of the students, but also significantly influences the shape of the resultant texts. It is imperative, then, to examine the influences of the assignment on invention. This category was used to code any references to the requirements for their videos,
as defined by the assignment sheet available to the students on Moodle. The participants were acutely aware of the assignment requirements as well as the constraints of the assignment as they planned and composed their videos.

Every student commented on the length of the assigned video, and they all believed that the time length restriction placed on their videos constrained the choices they might make. The assignment sheet for the digital autoethnography clearly specified a video length of four to six minutes, and this direction was reiterated in class (Figure 5).

![Assignment Sheet](image)

**Figure 5. First part of the assignment sheet for project 3: Digital autoethnography.**

As the students began work on their videos, they found delivering the content they needed and wanted to deliver in the allowed time to be a challenge. (This is interesting when compared to the reaction some students have to an assignment requiring six pages of alphabetic text, which they view as too demanding.) Every participant in this study
commented on the video length and the difficulty of meeting all of the requirements for the video within the allowed four to six minutes. Trying to view the limitation with a positive perspective, Maryam reflected that the time limit required that she “try to pick what was really important” to include in her video. She explained

Well, there was a lot of information that I wanted to put in my video, just from personal experience, but because we had to incorporate research and there was a time limit on our video, I had to kind of try to pick what was really important. So, I wanted to go and talk about more of the student aspect and like being in the class, and I was going to interview a teacher and see how she has dealt with like a student immigrant in her class. But there was just no way for me to fit that into my video and actually stay within the time limit and, you know, make it flow.

Not all of the students viewed the time limit as positively as Maryam did. Catherine found the time limitation overly restrictive given the requirements of the assignment, particularly the wide audience. In her reflection, she stated “I was constrained to a 4-6 minute video and my audience was fellow students, my professor, and other individuals interested in group psychology.” When I discussed this with Catherine in her interview, she expressed that she knew each type of audience would have different expectations, and it was difficult to meet those disparate expectations in such a short time.

Tyler agreed that the length restriction conflicted with the assignment requirements. He noted that he “would have preferred the length to be a suggested length” given the content requirements for the video, and he believed that the restricted length negatively effected the quality of his introduction. He explained that he felt that his introduction was weak in his
final video, but the video was already over the time limit, and he did not feel that he could cut any of the other information without sacrificing the audience’s understanding of his argument. In his interview he stated that he “would have preferred the length to be a suggested length, rather than [a firm] 4-6 minutes, because there was a lot of stuff we had to fit in that 4-6 minutes.” Amanda noted that if the assignment had not been so limited in length, she would have approached decisions about what to include in her video differently. She indicated that there were additional points that she would have liked to make in relation to her thesis, but there was simply not enough time to cover them. Like both Tyler and Amanda, Elena remarked that she had “so much more to say” that had to be cut from her video because of the time limit.

Students also commented on the content requirements of the assignment. As seen in Figure 5 above, the assignment required that the student’s videos incorporate three scholarly sources and one popular source, as well as an interview. Therefore, part of the content of the student’s videos was predetermined. In contrast to the innovative nature of the assignment, the assignment itself was prescriptive. While the students had choices about what sources to consult, and who to interview, they could not choose not to include source references or an interview. The requirement to consult scholarly sources meant that some students needed to change their focus group, or adjust their theses in order to meet the assignment requirements. Both Maryam and Amanda shared these experiences. Maryam adjusted the focus of her video from a narrow focus on North African students to a broader focus on immigrant students because she could not find scholarly sources that connected specifically to North African immigrant students. In her interview, she said that she found plenty of sources focused on
Asian students and on Hispanic students, but almost nothing on other groups. Rather than try to make generalizations about North African students based on studies conducted on other groups, she chose to broaden her topic, and she was pleased with the results in the end.

Amanda decided on her thesis based on what she could find in her research. In her interview, she explained that she initially experienced difficulty finding scholarly sources related to her topic. She stated

And so I kept changing my thesis to go with my research, because none of my research would support anything I wanted to say. So, then, finally I just did the research and made my thesis say what my research said.

Unlike Maryam, who was happy with the results of making changes to her initial ideas, Amanda was frustrated with this experience. She felt that she was unable to make the argument she wanted to make about her social group due to the inability to find scholarly material that was specifically related to that argument.

**Instructor Influence**

A second category affecting the invention of the text in this study is instructor influence. Any units of analysis referring to the instructor’s expectations as to how the projects would develop, as well as any references to the instructor’s feedback on the students’ work *in progress* were coded as “instructor influence.” This category does not include references to the instructor’s position as an acknowledged part of the audience for the final text. Instead, this category focuses on the instructor’s feedback on the project *during its development*. Because this study focused on a project completed as a class assignment, the
instructor clearly played a role in the choices that students made about their texts and in how the students developed those texts.

The instructor influenced the students’ work through comments and feedback that she offered both informally as students worked on their projects as well as through the more formal student-teacher conferences held in the Learning Commons. As the instructor expressed opinions on the students’ work, they felt compelled to make adjustments to their plans to accommodate her ideas. In his written reflection, Tyler discussed adding a second interview to his plan for the video based on the suggestion of the instructor. He stated

When I first started the project I only intended to get one interview from a serious runner. However, when I emailed my teacher to check my script, she recommended that I add another interview to my video in order to have more diversity. As a result, I added a casual runner to my video in order to balance out the more serious runner.

Tyler noted in his interview with me that the need to add this additional interview meant that he had to delete other material that he wanted to include because of the time restriction on the video.

Morgan shared with me that the instructor’s comments early in her work on the video made her apprehensive about her choice of topic. In her conference with the instructor in the Learning Commons, Morgan asked the instructor about how to define her group. She stated “there is no real definition for a group like ours; we have a complex relationship, we helped to raise one another, we were there for each other when our families weren’t, but I’m having a hard time finding a definition.” The instructor suggested to Morgan that she look up the sociological definition of “friend,” but followed this suggestion with the comment “you may
find that it is not a group.” When Morgan asked if this meant she had to change her topic, the instructor responded “I want you to look up the definition of ‘group’ in a sociological sense. I’m not sure that ‘friends’ fits that definition […]. You may be able to save your argument, but you’ll have to see if you can make it fit [the definition].”

In my interview with Morgan, she reflected on this conversation with the instructor, and remarked that she knew she would have to make a convincing case as to why her group of friends met the criteria for a sociological group. Morgan reported to me that she emailed two professors in sociology; she wanted to interview at least one of them and to discuss her project in the hope that she might gain knowledge that would help her to support her argument. Neither professor responded to her emails, however, and Morgan was left to make the connection on her own. She explained to me that she spent a lot of time in her work on the video trying to make certain that she proved that her friendship constituted a group, and this affected the content she chose to include in her video. Rather than focus exclusively on her own friendship group, Morgan chose to begin her video with a montage of photographs showing many of the cliques that made up the social landscape of her high school. Morgan believed that this strategy helped to make her point that these cliques were sociological groups.

Instructor comments not only influenced the content of the students’ videos, but also the arrangement of the videos. In her student-teacher conference, Maryam asked the instructor if she might withhold her thesis until the end of her video:

M: Can I have my thesis at the end rather than at the beginning of the video?
I: How might you do that?
M: I could put supporting evidence at the beginning and build toward the thesis.

I: I’d like some indication of your thesis earlier.

M: But if I’m trying to build a message through my video, do have to give everything away at the beginning?

I: Try out what you want to try, then ask for feedback in peer review. If the audience doesn’t get it, that might mean you need to rethink it.

Although the instructor did not tell Maryam she could not try her idea of withholding her thesis and building toward it in her video, she chose ultimately not to try this. Maryam shared with me that she felt the instructor did not like the idea, and she did not want to risk her grade to try it.

In her conference, Catherine and the instructor discussed sources that Catherine had found on identity, on social construct theory, and on farmers as a group with specific characteristics. Although Catherine knew that these sources met the requirement for scholarly sources, she was concerned about how to incorporate them into her video without the video being “too text heavy” to be “entertaining.” The instructor encouraged Catherine to “balance the theory with information on the group and with your personal story.” In her interview with me, Catherine shared that she left this conference as confused as she was at the start, but she held on to the idea of “balancing” theory, discussion of the group, and her own information, and therefore when she saw an organizational structure in a print text that combined theory and personal narrative, she recognized it as a possible arrangement for her video. She believed that the arrangement of the print text offered the “balance” the instructor had talked about.
Purpose and Goals

Although exigency (the initiation of the text) and the instructor were early influences on invention unique to the particular multimodal project these students were engaged in, other influences on invention might apply to any multimodal composition. The purpose of the composition and the composer’s motives within the text are among such influences. Here, “purpose” is defined as the students’ understanding of the purpose of the video in general—what the composition is meant to achieve, generally—while “goal” is defined as the students’ individual hopes and desires for the composition. The combination of “purpose” and “goal” acknowledges that the purpose of the videos was largely determined by the assignment; however, each of the students shaped that purpose to achieve his or her own personal intentions. Four of the six students focused on purpose and goals as an influence on the development of their video in either their written reflections or their interviews.

As Tyler explained in his reflection, “the purpose of the project was to make a video about a certain social group and how they fit into society.” In his interview, he added “you had to argue what makes this group a group.” He understood, therefore, that his video needed to explain his group and the group’s relationship in society, while also arguing that his group demonstrated characteristics of group identity. With the digital autoethnographies, the personal connection the students felt to the purpose is significant. The purpose was not just to explain information about any social group, but a social group of which the student was a member. Tyler said that he took care to produce a video that achieved his purpose; he also admitted this was not something he really thought about in his first two projects for the class because the topics were more remote. In his interview, he stated clearly “I decided what I
wanted to include because I didn’t want anything to distract from the overall purpose of the argument.” Because the videos were focused on groups that the students were an intimate part of, the students felt a strong sense of responsibility to their groups. Every participant explained that his or her goal was, in part, to represent his or her selected groups with integrity. Catherine expressed this best, both in her written reflection and in her interview. In her interview, she stated this assignment

was also demanding that I put a part of my life into it, and to explain that part of my life to my audience. I realized that this was a public academic display of something I am very passionate about, Christmas tree growing. Panic began to set in at this point. I had never had emotional or personal attachments to an assignment, and this new component of project three made me question everything.

In her interview, when asked about the choices that she made, Catherine teared up before saying “I just tried to produce something I was proud of, and that my [social] group would be, too.” Elena echoed this sentiment in her own interview, stating “because I’m trying to portray something that is a big part of my life, I want to portray it right.”

Morgan explained that her desire to ensure that everyone would understand the nature of her group and appreciate its role meant that she spent a lot of time introducing her group in her video. She felt that the extreme cliquishness of her high school was not something that would be familiar to most of her classmates, except perhaps as something they had seen in a movie, and she believed that this needed explanation. However, she had learned that the exclusivity of such groups could be negative, and she wanted to acknowledge that in her video, as well. She conceived of her video as a space to argue that social groups, like hers,
can be both beneficial and detrimental, but she wanted to do so in a way that was respectful of her group and its place in her life. For Tyler, Catherine, and Morgan, as well as for Amanda and Elena, choices they made for their videos were affected by their intrinsic motivation to represent their groups in an honest and genuine manner.

Intertextual Influences

Bazerman (2004) explains that “we create our texts out of the sea of former texts that surround us, the sea of language we live in. . . . The relation each text has to the texts surrounding it, we call intertextuality” (pp. 83-84, emphasis in original). Intertextual influences were certainly at work in the students’ composition of their digital autoethnographies. At least three types of texts exerted intertextual influence on the students’ work during this project: the sources they selected through research, the interviews they conducted (which also served as sources), and their exposure to texts similar to the texts they were composing. Any references to their use of sources, the influence of the interviews on their decisions about their videos, or references to videos shown as samples were coded as “intertextual influence.”

Although I have previously discussed the source requirements imposed by the assignment as a constraining factor, within the context and parameters of the established assignment, students utilized research and their sources as a means of discovering the arguments they might make in their videos, and as a means of developing those arguments. Each of the participants noted that identifying a thesis was an early goal of his or her work, and most identified locating scholarly sources or conducting research as the starting point for determining that thesis. For example, in his interview Tyler explained, “pretty much I started

133
by going to the library to research and that’s where I kind of started to find my argument.” Amanda also identified research as the starting point for her thesis identification. In her interview she stated that “I went and I started doing research, and I tried to start figuring out a thesis or an argument.” Of course, as previously discussed, because Amanda was unable to locate sources that connected to her initial thesis, she adjusted her thesis based on the sources she was able to locate. She suggested “through that research I did find my argument that I settled on,” noting that she described her choices as “settling” because she did not believe her thesis to be particularly strong. In her written reflection, Catherine noted the impact that early research had on shaping her argument:

During my first stages of research I found a source that helped me shape my argument later in my process. It was an article written by R. Swisher, G. Elder, F. Lorenz, and R. Congor. Within the article, Swisher and his colleagues discuss the thought processes of farmers, and described how they exist in relation to their families and communities. Swisher states within his article that, “As a way of life, farming is characterized by a distinct set of values: self-sufficiency of the family-unit, a strong work ethic, the importance of family and community integration, attachment to the family farm…”. In this passage lies the basis of my argument. This article enabled me to shape my argument so that I could then work on mapping a path of how to support my argument.

Catherine explained that once she found the basis for her argument in this source, she then began to make comparisons between this research and her own experiences within her group,
and her argument developed out of these comparisons. Maryam also noted that research and locating sources helped her to determine a thesis for her argument. She stated:

After I did more research, I decided to start thinking of my thesis, because at first I didn’t really have a thesis, just a topic. So I just looked at my research and decided pretty much like what did I have the most information on, and […] that was the adaption process [of immigrants].

In her written reflection, Elena explained that although she had a thesis in mind when she began to look for sources, she was unsure of what to look for as she researched her topic. Because she was able to find “a plethora of peer-reviewed articles” on anxiety, changes in sleep and eating habits, and declines in academic performance suffered by military children with a deployed parent, she was able to use the information in the sources she located to decide how her argument should develop.

Unlike the participants who described “finding” their argument in their research, Morgan had some sense of what she wanted to say about her group before she began searching for source material, and she did not begin her project work by searching for sources. Her uncertainty was whether or not what she knew she experienced within her group would be borne out in the literature. Not only did she find material that supported her notions about her group and its positive role in her development, she also found material pointing to potential negative influences. She explained to me that prior to finding this material, she had not previously considered that there may be negative aspects to close, exclusive friendships like the one she shared with her group. Therefore, the information she found through research helped her to develop an unanticipated counterclaim in her argument.
In the case of this digital autoethnography assignment, the required formal interviews also served as primary sources that aided and influenced invention in an intertextual manner. Like the sources found through research, the material the students gathered through their interviews helped them both determine and develop their theses. Maryam chose to conduct an interview with her brother early in her work on her video, because she believed her brother might have insights that would affect her thesis. On reflection she was happy that she made that choice, stating “he said some things that weren’t in my [published] research” and the interview helped her to decide on the main points of her thesis.

Catherine interviewed three different Christmas tree growers, two of whom worked for her family, and one who did not. Although she did not use all of these interviews in her video, she explained that the interviews were all important in helping her to decide what was significant enough to include in her argument. She realized that if an idea was mentioned in more than one interview, it was likely important. She stated that she was able to use the interviews “to draw conclusions” about what was significant to tree growers as a group.

The interviews also provided audio or video footage that students could incorporate directly into their videos as content. Thus, through conducting the interviews students were not only discovering and developing their ideas, but also, in effect, simultaneously drafting material for their videos.

In addition to sources located through research and their interviews, students were also influenced in an intertextual manner by their exposure to and knowledge of texts similar to the videos they were generating. Early in the work on the project, the instructor asked the students to view several different “visual stories” or “visual shorts” similar in nature to the
videos the students would create. Although these visual stories were not focused on social
groups, and only a few were autoethnographies, these videos offered the students a sense of
how their videos might take shape. In their discussion of these videos, students talked about
how color created tone, how the use of live footage or video contrasted with the use of still
images, how suspense and anticipation could be created through silence or a black screen,
how close-ups could be used for emphasis, and how sound and lighting might be used for
effect or to generate a mood. They also discussed how factual data was incorporated into
some of the videos without being “boring.” Several weeks later, the instructor showed the
students two sample digital autoethnographies composed by students in another class in a
previous semester. Students discussed what was done well in each of the videos, as well as
what might be improved.

Morgan, in particular, made note of how seeing these sample autoethnography videos
impacted her composing process. In her interview, she talked about the two student examples
she had been shown in class. She felt that seeing these examples was “helpful.” She
explained that by watching those videos, she was more aware of what she did not want to do
in her own video. For example, discussing the interview portion of the second sample video
she noticed

Like he kind of just had the people sitting there, and I guess he was asking them the
question for the first time. And he just played the whole video. He didn’t like make
things more efficient. [In her own video] I really wanted to like get to the question,
get to like the part of the answer that I wanted to emphasize. […] I wasn’t
manipulating even [the] words, but like if there was like lots of ‘ums’ or like pauses
or like digressions, I wanted to like cut all of that out and make it kind of as streamlined as possible.

Here, in comparing her video to the sample one shown, Morgan indicated that as she incorporated her own interview footage into her video, she was very conscious about including only the more significant excerpts of the interviews and to cut out unrelated material.

Exposure to autoethnography articles also influenced the students, particularly in terms of how to arrange the information in their videos. Early in the project, students expressed concerns with how to blend scholarly material with the personal narrative aspects of their autoethnographies. After discussing how difficult it was “to know where to use research and where to use personal anecdotes” in her video, Maryam explained in her written reflection that an assigned class reading helped her to decide how to effectively integrate scholarly source material with her narrative:

After rearranging my storyboard and video numerous times I decided to reflect on a reading we read for class. For homework we were required to read an autoethnography titled “An autoethnography on shifting relationships between a daughter, her mother, and Alzheimer’s dementia” written by Marina Malthouse. This reading helped me because it was a good example of how you can incorporate research and personal anecdotes in an autoethnography without taking away from structure or logical flow. Marina Malthouse would present research and then follow it with a personal anecdote which supported the research. I decided this was a suitable
way to organize my video. That is how I decided to incorporate my research and personal anecdotes into my video.

Catherine echoed Maryam’s feeling of relief after reading this article. She stated “as soon as I read that, I was like, thank you. Like I know what to do now. This is what it’s supposed to be like.” Morgan, Tyler, and Amanda utilized similar strategies of arrangement. There is no way to know whether or not the participants would have noticed the arrangement strategy in the print article had they not been searching for an arrangement strategy for their videos. This does show that these students were able to take an arrangement strategy from a print article and successfully remediate its organization for their own digital autoethnographies.

Influences on Modal Possibilities

As Jewitt (2005) explains, “print- and screen-based technologies make available different modes and semiotic resources in ways that shape processes of meaning making” (p. 309). She goes on to note that “students in the classroom (as elsewhere) are engaged in making complex decisions about what mode to use and how best to design multimodal configurations” (p. 317). This was certainly the case for the students composing their digital autoethnographies. Decisions regarding content and form involved not only what to include in the video, but how to present the material. Students’ choices about images, text, and sound in their videos were influenced by three criteria: their knowledge of what was appropriate for the medium, the relevancy of the material to their argument, and concerns over fair use.
Choices based on medium

In part, students determined how to present information in their authoethnographies based on what they believed was appropriate for the medium of video. They understood that having an effective video meant coming up with strategies to deliver material in multiple modes, and likely did not involve reading long blocks of text in voiceover narration as if reading an essay. Catherine and Maryam seemed to have the most concerns with this, while Morgan had a more innate understanding of what to do. Catherine described struggling to know how to sustain her argument. In her interview, she stated “I was worried, because it was not just [the instructor] reading a paper—it was someone listening, and you’re not…you have to keep them engaged. You can’t construct your ideas in the same way.” She found this medium a hindrance to fully developing the argument she wanted to make, explaining “you have to condense your ideas. It almost…it’s not dumb them down, but you have to…it’s not necessarily a scholarly work anymore.” When asked to elaborate on this point, she said

With a paper, you can ramble, you can write sentences, you can construct ideas and then connect them by sentence or connect them… And you can also do that in audio but you don’t have that time period, and you can’t just… Like I found myself a lot of the time, I would write – I had a script. I would write, and I was like, oh my goodness, I have a whole page that I’m going to… I have… I can’t do this. I have to shorten it.

Her sense was that in a video, material needed to be covered more quickly, and, therefore, could not be covered in the same depth that it might be covered in a more traditional
academic essay. Maryam shared a similar idea, but seemed to be more open to the way that visual and other elements might contribute to the argument:

And you have to show it [your argument] like through pictures. You can’t just read like two paragraphs straight during a video, because that would get really boring. So, you had to try to focus on the main points and you couldn’t go as in depth. So I feel like that might have weakened my argument a little bit, but… Like in a video you have to talk if you’re going to get something across, like with words, or write it up in your video. And I didn’t want to write out a whole paragraph and have… try to have people read it.

Though the students were encouraged to think of their projects as “little documentaries” (assignment sheet), they seemed more concerned with their projects as videos and the need to be entertaining and “not boring” than any consideration of the genre features of documentary. Morgan captured this in her interview when she said “I tried not to go like crazy with information or… I wanted it to still be interesting to watch versus just like informational.” Morgan indicated that as she began to develop her video, she was “really concerned with the aesthetics of it.”

Choices based on relevance

Students also made decisions on what images, sounds, and video footage should be included on the basis of relevance, which is closely tied to purpose and evidences their understanding of the clear connection between content and form. Students carefully considered whether or not a particular element contributed in a meaningful way to the arguments they were trying to make. In discussing his selection of images, Tyler noted
“Rather than just focusing on what my words were saying, I also had to make sure the images added subtly to the overall video and did not subtract meaning or distract from my words.”

Amanda was surprised at the level of effort this required, stating “the time and thought that is required to make sure that the pictures depict exactly what you want to say in words is very exhausting.”

Students considered relevance in deciding what interview footage to include. In terms of the interviews, Maryam explained that although she only included one interview in her video, she conducted a second interview but decided against using it in her video because it was not relevant.

I interviewed my dad’s friend who’s a lot older, because I wanted to get a different perspective. But then I realized that the… and like the information I got from that interview was a bit irrelevant to my main focus. So I decided not to include that. Instead, she chose to focus on the single interview that better connected with her thesis and to exclude the video she believed was not as close a fit for the argument she wanted to make.

Catherine made a similar decision with her interview footage:

I was going to use all of Parish’s interview or most of it. I had to decide not to do that because [my video] wasn’t a report on Christmas tree growing. And [that interview] was a report on Christmas tree growing. So I got a lot of footage that I didn’t even need.

Tyler also excluded quite a bit of interview footage from the main portion of his video, explaining that in his interview with the “casual” runner there was a “bunch of footage that I was not able to put in, because it had no relation” to the argument. Unlike the other students,
he found a creative use for that footage, however, and included clips in outtakes during the
credits of his video, which he believed added humor to his video and, in doing so,
emphasized the difference in serious and casual runners.

Amanda considered relevance in determining who she would interview. She wanted
to interview someone who had the right personality to match the argument she was making in
her video.

I interviewed my friend, Jenay. She is an elementary ed major, and she is like the
biggest sweetheart, and I knew that her personality was perfect. And that was exactly
the personality that had been described of a good teacher. So that’s why I
interviewed her.

Students considered relevance in determining what sound to include, as well. Maryam
integrated excerpts from the song “Home” by American Idol winner Phillip Phillips
throughout her video focused on immigrant students and their adaptation to life in America.
In her interview, she explained that the following lyrics of the song captured the experience
of an immigrant in an unfamiliar place:

Hold on, to me as we go

As we roll down this unfamiliar road

Although this wave is stringing us along

Just know you’re not alone

Cause I’m going to make this place your home.

Maryam incorporated the lyrics into the visual imagery of the video, including a moving
image of a passenger riding in a car down a road through “new” city, taking in the scenery,
which led to a unified, coherent presentation (J. Murray, 2009). Catherine, who included a folk-ish sounding Christmas song in her video, explained that the traditional, “old-fashioned” sound of the song connected to the characteristics of her group. “I wanted something that sounded old-fashioned, a little bit quaint, and traditional. And so I found [the song], because that’s how… that’s growers – we’re not in the mainstream, we’re not hipsters, we’re not… we’re rooted in tradition.” Tyler used the concept of relevance to explain why he chose not to incorporate music into his video. He expressed a belief that music in a video is often used for “background” or to serve as filler, like “white noise,” and it doesn’t add anything to the video. He argued that if music didn’t work effectively with the content of the video, it did not need to be included, and he chose not to include music because he did not see a connection with his topic.

Students also considered relevance in terms of their stylistic choices such as choice of color and font. Elena believed that her video, focused on military children who had a deployed parent, should be serious, and she explained that she attempted to reflect seriousness in the color choices for her video.

So I was thinking, you know, […] I’m not making it bright and colorful. The only time I had color in my video – I don’t know if you noticed – was me and my sister on the stairs. It was red captioned, because you can’t see the black and white.

It is interesting that Elena says this, however, because all of the still images and the interview video footage that she included in her video are in color. Her background, and the text that she added, are all in black and white. Because color can be easily changed on still images,
either Elena was not aware of this possibility, or did not consider the color in her images to distract from the “seriousness” of the background and text.

Catherine’s video on Christmas tree growers featured the colors red and green, which she described as “traditional Christmas colors,” and she selected a font that she felt embodied the holidays. Maryam also made very interesting use of color in her video that she believed was relevant to her argument. In her progress conference with the instructor, she explained her choice “to have part of it [the video] in black and white and part in color as a reflection of how immigrants build an identity and adapt to a new environment.” During the part of the footage when she is describing her early memories in the United States after arriving from Casablanca, her memories of being confused and unsure, the footage is in black and white. Footage describing the present, when she has adapted to life in America, is in color.

Morgan also discussed relevance when talking about the choices she made for her video, particularly in terms of her choice to include a video clip from a film. Her autoethnography focuses on her high school clique, one of many in a very stratified high school. Early in her video, she included a clip from the film *Mean Girls*. In this clip, a high school student is sharing a map of the cafeteria with a girl new to the school. On this map, the “veteran” student has labeled the cafeteria tables with the names of the social groups present in the high school. She explains to the “new” girl that everything about her high school experience will be determined by which group she chooses to ally herself with. Morgan explained to me that she included this clip because of its relevance to her own argument, in that it so clearly paralleled the situation at her own high school, and it was a reference she knew her audience would understand.
Choices Based on Concerns (or Lack of Concern) Over Fair Use

Student concerns over fair use and copyright also affected the decisions they made about what to include or not include in their videos. Most of the students determined early on in their work on the project that they did not plan to share their videos outside of the context of the classroom, and therefore under fair use for academic purposes, they could use material that would otherwise be protected. As previously noted, Maryam used a commercial song, “Home” by Phillip Phillips, downloaded from iTunes. Morgan included a film clip from *Mean Girls* that she was able to pull from YouTube. Tyler incorporated a brief clip from the television show *How I Met Your Mother*, which he also found on YouTube. Each of these students articulated the relevance of this material to their theses, and for Maryam and Morgan, these materials influenced the entire shape of their videos.

Other students were more concerned or were less clear about the acceptable uses of copyrighted material, and in some cases avoided including material they believed would contribute to meaning in their videos because of their lack of clarity. Amanda partly blamed her slow start on her video on her confusion about this issue. In her progress conference several weeks into the project, Amanda had no work completed on her actual video. When asked why she had not made any progress, she explained that she was having trouble because she could not find images and videos that matched what she had envisioned on her storyboard that were “freeware” (confusing creative commons licensed material with software that is available for free on the Internet).

Although Catherine commented on the relevance of her musical selection to her argument, she also noted that had she understood earlier in the project that she could use
music from iTunes, she might have made a different choice. When she learned that she could use more mainstream music, it was too late to rework her video. Although she knew that her musical selection was appropriate for her video, she was left with the feeling that it was “so dorky” in comparison with what others in the class had used, and had concerns about how her audience would react.

Elena reported changing an early idea she had for her video because of the uncertainty of whether she could use a clip from YouTube. In her interview, she explained that she had found a video on YouTube with a soldier returning home from deployment to the excitement of his family, but because she “had no clue if we could use YouTube” she “dropped that idea and then started doing something else.”

Awareness of Audience Expectations

Students’ decisions about the content and form of their videos were also influenced by their awareness of audience and their knowledge of audience expectations. Students described making particular choices about their videos to adhere to audience expectations or needs, and also to create a connection with the audience. Any reference to “audience,” including audience expectations, needs of the audience, connecting with the audience, or expression of fear about the video being “boring” (which anticipates audience reaction) was coded in this category.

When referring to audience, students tended to discuss audience in general terms such as “students,” the “academic” audience, and the “popular” audience. While they certainly recognized that their instructor was a part of their audience, in their specific discussions of audience they tended to focus on her identity as an “academic” and the expectations that
academics would have for their digital autoethnography, rather than her role as evaluator.

Students understood the complexities of composing for such a broad audience. In her reflection Catherine wrote “the different members of my audience required a recipe that would result in a video that was interesting, academic, and relevant to my group identity.”

The need to strike a balance between being entertaining but also “academic” posed a conundrum for the students. As Amanda explained, “My film is very informative so I am not sure that I accurately accounted for the popular audience, but I tried to make sure that the studies provided were relevant and understood by the audience, and the pictures were where I really tried to keep the popular sector interested.” The sense that a popular audience had different expectations from what an academic audience expected seemed to be a concern. In her reflection, Catherine offered detail on how she made various decisions to appeal to different aspects of her audience:

I searched for music that was upbeat and silly. I hoped this would keep the attention of the students. Also in regard to the students, I tried to stick with a Christmas theme, with colors that were pleasing and festive. Due to Christmas being so close to project 3’s due date, I hoped that the students (and other individuals in the audience) would be in a festive mood, and be pleased to witness the Christmas/Holiday theme of my video. In regards to my professor and the individuals interested in group psychology, I included a quote from one of my scholarly sources, as well as spoken information on the morals of the group, and the struggles growers face as represented by Swisher and Larson. I hoped that the music and interviews would be something the whole audience could be interested in, and it would keep their focus on the video.
Here, Catherine is sharing her perception that students would expect to be entertained, while the academic audience (the professor and others interested in group psychology) would expect scholarly content. It is as if the students saw “entertaining” and “academic” as almost mutually exclusive, and they needed to determine how to make their videos both informative but also interesting.

The knowledge that she was composing for an audience that would not be familiar with her group resonated with Morgan, who said in her interview that she focused intently on explaining her group in her video, because both the instructor and classmates had previously raised questions about whether or not her group “qualified” as an appropriate group for the assignment. She believed that the questions were raised because no one was familiar with her high school and its social hierarchy, and therefore she knew she needed to address this in her video. She explained “I spent a long time doing kind of the intro to my group, because it was more complicated […], it was not like a very cut and dry group. It was something that needed an explanation” for the audience to understand.

Tyler similarly recognized the need to connect with an audience who may have no connection to his group, and he knew that he needed to include information in his video that anyone could understand without “insider” knowledge. In his interview, he stated that this was one of the more difficult aspects of deciding what to include in his video. He explained the need to build in references that anyone could understand in relation to his group. He said “you could put images in that you had that might mean something to you, but would mean something different, or nothing at all, to someone else. So you had to find stuff that everyone can relate to that connected to your group.” Tyler also discussed the importance of including
images that would be familiar to a popular audience to help to explain the sociological theories he used in his argument. He explained “Like I put Dr. Seuss in there with the Sneetches [...]” Here, Tyler refers to a segment of his video that explains “social identity theory” and its connection to serious runners, and he made a connection between this theory and the children’s book The Sneetches to make the concept clearer to an audience that might not be familiar with the theory13. Amanda believed this was important, as well. In one part of her video, she drew on Myers-Briggs personality type indicators, and she described working hard to find a way to visually represent that information.

*Interactions with Others about the Text*

It was clear both in my informal conversations with the students and from comments made during their formal interviews that students were affected by conversations with others about their projects, and that those interactions influenced their texts. This category was used to code any references to informal interactions with classmates outside of the scheduled class time and required class activities, people who were not members of the class (such as other members of the social group, friends, or roommates) and who were not the selected interviewees. For Tyler, Morgan, and Elena, collaboration with others was a particularly influential part of their invention processes, while for Catherine, sharing her “work-in-progress” video served as a means for gauging audience reaction.

Early in the project, Tyler engaged in an email conversation with a friend that influenced the content of his video. After he determined that he wanted to focus on “serious”

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13 In *The Sneetches*, fictional animals are divided into “insiders” and “outsiders” based on the physical characteristic of the presence or absence of a star on their bellies.
runners as his social group and contrast that group with what he termed “casual” runners, he emailed a competitive runner he knew to gather opinions and ideas about the differences in the two types of runners, and that information was useful to him in deciding on the development of his video. That email exchange also allowed him to pilot the questions he later used to conduct interviews that were part of his video.

Morgan also turned to members of her social group for collaboration. She shared a series of text messages between her and two high school friends who were a part of the group (figure 6 below shows an excerpt). She used the information from this text discussion to generate ideas for her video.
Figure 6. One screen shot from Morgan’s text messages with friends.

The groups identified in this series of text messages, including but not limited to those shown in Figure 6 (“the peppers,” “the snitches,” “the theater kids,” “the glitter pack”) were all referenced in Morgan’s video, and she had photographs of each group to support their identity as a group. Figure 7 shows a screen shot from Morgan’s final video, including a photograph of “the glitter pack.”
Morgan also reported that while she was home over the Thanksgiving break, she was able to share the draft of her video with friends in her group and she received feedback on additional information she might add.

While Morgan’s interaction with her friends was upbeat, fun, and generative of content for her video, Elena had more serious conversations with her friends about her selected topic for the purpose of testing her thesis as it was developing. Once she began reading source material on her topic, Elena noticed there were aspects of the research that she both agreed with and disagreed with based on her own experience. She recognized, though, that the experiences of military children with deployed parents weren’t all the same. In her interview, she mentioned bringing the project up with other friends who had experienced the deployment of a parent to gain their insight:
During the research, I was like, well, I agree with it but does that mean other people agree with it? I’m not quite sure. I’d bring that up with my friends. And then overall I had to really look at the group under a critical eye thinking, well all of our experiences are different. And I mean the different aspects. One girl—her mom’s a single mom… numerous siblings, and what she’s gone through. And she’s the oldest, so that’s a nightmare. The other girl—her father, like I said, was injured. He had half of intestines lost due to an explosion. He’s still going through some stuff right now, but he’s a lot better than when I first met him. And her mother works. And she has a little brother. And he’s not ‘little’ little. He’s just like maybe 2 years apart. So her experiences were really different from mine.

Elena made the specific decision to discuss her research findings with friends and not to discuss it with her own family. She explained:

I found those critical points in my life were the same as the research from the anxiety, the lack of eating, the lack of sleep, academic decline, acting out. I found myself… I had done the same thing, and in all honesty I was going to call and ask my mother, but then I realized that was like the worst moment in time for her because I was utterly horrible. And my father was gone. So I didn’t want to bring that up. I decided against it.

Elena used these conversations with friends to check the accuracy of the thesis she was working to develop in her video, because she did not want to misrepresent the experiences of her group as a whole based solely on her own experiences. She incorporated conflicting experiences and ideas in her video.
While Tyler, Morgan, and Elena all turned to individuals within their social groups for collaboration, Catherine chose to share and discuss her ideas with individuals outside of the group. She did this twice over the period of work on her project. Initially, collaboration and talking with another student helped Catherine to define an appropriate and interesting social group as the focus for her video. Early in the project, Catherine wanted to focus on a campus Christian group. She had several concerns about this choice, however, and she voiced those concerns with another student. The student suggested that she might need to “stay objective” in her presentation of the group, or “conversely, consider the rule about the topics of conversation that are to be avoided at the dinner table, politics and religion.” Catherine felt that because she could neither stay objective nor avoid the topic of religion if she chose that group, she needed to select a different group for her focus. In this case, Catherine used discussion with others to help her make decisions about what to focus on in her video.

Once her video was in progress, Catherine turned to a peer to ascertain whether or not her video was effectively communicating the message she wanted it to communicate. For her formal, required interviews, Catherine had discussed her project with her own family and with other Christmas tree growers in her small community, and she knew that insiders would “get” her video because it was their lived experience. She was less certain whether someone who had not lived the life of a member of her group would understand the group and its dynamics. In her interview, she told me that she chose to share her video with her roommate, and she explained “My roommate watched it, and we’re not that great of friends, so it was nice that she said ‘I think it’s good.’ She mentioned some things [that might need work], and
so I made a few changes.” Catherine went on to say that if she was to do a similar project again, she would want to get even more objective feedback to help her think through the project.

*Limitations of the tools of inscription or the user’s knowledge of those tools*

This category was used to code any reference to decisions made based on the perceived capabilities and limitations of the software. Three of the six participants—those who used Windows Media Maker Live to compose their videos on a PC platform—expressed a belief that limitations of the software program inhibited their ability to do the things they wanted to do with their videos, and these perceptions influenced their processes of invention. Catherine, Maryam, and Elena each used Windows Media Maker Live, a Microsoft program, to build their videos. Each perceived that this program was not as robust and did not offer the possibilities that iMovie, comparable software for the Mac, and the program that was covered in the in-class workshop, offered. Each of these students expressed the need to revise their ideal visions for their videos based on their understanding of the capabilities of the software. Maryam argued that Windows Movie Maker “puts certain restrictions on you,” and those restrictions meant she needed to “Keep redoing [her] outline and rethinking what [she] wanted in the video.” In her interview, she explained that she had to make changes to her initial ideas to accommodate the affordances of the technology. In the end, however, she was “still satisfied” with her product. Catherine, on the other hand, was not satisfied. She noted that because of the limitations of the technology, she was not able to use all of the footage.

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14 Amanda also worked on a PC platform. However, she chose to compose her video using Camtasia.
from her interviews that she wanted to use, and she believed that “subtracted from the vision” she had for her autoethnography. This also meant that she had to come up with an alternative means of sharing the information in the interview footage she could not use. She had to “change [her] plans to suit the technology,” by summarizing in voiceover what the interviewee had said. She was less than pleased with her end product, referring to it as “only one step up from PowerPoint.” Elena expressed similar reservations about the capabilities of the software. She was frustrated that the workshop only covered the Mac software, because she believed that she might have been able to do more had she had a bit of formal training. In particular, she stated that she was unable to determine how to overlay and to adjust the volume levels of two audio tracks (a music track and a voiceover track) so that they might play simultaneously. This was a feature of iMovie that was explained in the workshop, but no explanation was offered for Windows Movie Maker Live. Elena also noted, however, that her procrastination and the hardware crash may have contributed to her inability to get the software to perform as she’d hoped. Had she had more time, she believed she could have found the answers she needed.

*Students Perceptions and Feelings about the Project*

Students’ perceptions of the project as a whole also influenced their processes. This category was used to code any student comments concerning their feelings about the project as a whole, and how that influenced their work. All of the students commented on how their perceptions of the project overall influenced how they felt about working on the project. Two of the students commented that they found this project very “freeing.” In fact, Catherine, who
was overall the most displeased with her final video, was one of the most vocal about feeling
freed by this project. She explained

    I enjoyed having the freedom. There wasn’t a certain format, you know. There wasn’t
an intro, paragraphs, and then a conclusion. Although there was a certain thing that
was expected, you know, you did still have an intro, but it wasn’t so constricted. I
mean just the freedom really, and the freedom to represent your ideas in the way that
you chose. I enjoyed that.

    Tyler echoed Catherine’s remarks. He noted that he enjoyed this project more than
the previous projects, because he felt he had “more freedom” with it. He also found that it
offered more room “for creativity.” He noted, “I like being able to do pretty much whatever I
wanted to with the project creatively. Like you could have had music. You could have
[pause] You could have done pretty much anything.” An added bonus for Tyler was that the
topic was one “that interested you.”

    Elena also commented on how easy it was to become involved in her work on the
project because it was a topic that she cared about, and she could do so utilizing multiple
modalities. In her interview, she stated, “this was one of those times [when] I’m not restricted
to typing a paper on a topic that I really could honestly care less about.” She went on to
explain, “when you have image, you have music, you have your own voice, you’re making
your own story. There are no limits on what you can do.”

    Amanda also commented that the opportunity to include multiple modalities made the
project more enjoyable. She particularly liked the visual allowances of video, and she said
“the visual part’s a lot more fun, especially if you’re doing live shots.” She explained that the
option to use modes other than alphabetic text opened up more possibilities for how to relay information.

Morgan was the only student who had an overall negative opinion of the project. In her interview, she shared “I guess it might have been [...] a fun idea, but I hated it.” She went on to say “I guess I can see how it was trying to be innovative and progressive. But I would have preferred just a paper.” When pressed, Morgan explained that the project was time consuming, and that every time she began to work on the project she became frustrated because the work required was so new. Further, because she lived so far away, Thanksgiving was the first time she’d been home since the start of the semester, and she resented having to spend her holiday working on the project. She believed that an essay would have felt less experimental, and therefore would have required less time.

Maryam, who remained optimistic throughout the project despite a few setbacks, characterized the project as a challenge. She approached each obstacle simply as a problem that needed to be solved, and she explained to me in her interview that working on this project made her a better problem-solver. Prior to working on the video, she had never considered the connections between the work she completed in Biology and composing, and likely would not have considered those connections only through essay writing. She stated that not only will she approach future opportunities for composing somewhat differently on the basis of this experience, but she also learned good life lessons from working on the project. In her written reflection, she wrote

In the end I have created something that I have never done before. I created a miniature movie. Although I was faced with many obstacles, I now view those
obstacles as learning experiences. Now I know how to use Windows Movie Maker, create a narration, and put together a decent storyboard for a video. I have also learned the hard way that life usually does not go as planned, especially if technology is involved. This was a lesson I was not planning on learning. Retrospectively I am grateful for all those complications. Having finished a project that contained so many obstacles encourages me to do things in the future that I usually would not go for because of the fear of failing.

Summary

In this chapter, I have offered discussion of the findings from classroom observation, interviews, and written student reflections of each of the six participants in the study. These findings offer a broad perspective on the actions involved in the conceptualization and actualization of a multimodal composition. Further, they offer insight into the many textual and contextual factors that influence decisions made and actions taken while composing. These data emphasize both the social nature and the complexity of composing, while also highlighting the effect that assignment parameters and instructor feedback and response have on student writers. Interesting tensions emerge in the data related to the students’ desires for “freedom” in working on such a project coupled with their need for direction and support. The data also suggest potential correlations between technological anxiety and procrastination.

In chapter four, I discuss the more specific and detailed actions and operations of a single participant, Tyler, drawn from over fourteen hours of screen capture video.
CHAPTER FOUR: RESULTS FROM A SINGLE STUDENT’S SCREEN CAPTURE

While observation, written reflection, and interview data do offer insight into student processes, these methods cannot capture the moment-by-moment activity that a writer engages in as he or she composes. As Geisler and Slattery (2007) explain, “video capture technologies provide a useful means of capturing a rich sense of writerly activity by producing a detailed record of digital writing processes and of the artifacts produced in a digital writing environment” (p. 185). This chapter presents the findings from the screen capture videos of one participant, Tyler. These data address RQ 1 and RQ 1b at the level of action and operation with more specific detail than the data presented in chapter three.

Background Information on Tyler

Tyler was the only male participant in the study to remain in the class until the end of the semester. As noted in chapter two, he had a strong background in math and science, and planned a major in nuclear engineering. While in high school, he took online courses through a state-funded high school for high-achieving math and science students, and, additionally, he took a course in level three Calculus at a state university. In his background survey, Tyler reported that several courses throughout his high school career required writing, including a variety of writing assignments ranging from essay answers on tests or written explanations to problem solutions to a “ten-page research paper” completed in the fall of his senior year. He recalled being asked to write “usually about once a week” during high school. When asked to describe his “typical” writing process for writing an essay, Tyler indicated that he would first begin with research, then develop an outline for his paper, followed by the completion of a rough draft. Once the drafting was completed, Tyler would “personally review” his paper
and make needed changes before participating in a “peer edit.” After receiving feedback from a peer, he would prepare a final draft. He noted that these “stages” in writing were often assigned by teachers. When I specifically asked Tyler if his process was different for different types of writing, he responded that he always followed the same process for essays that he could work on over multiple days, but that he had to write essay answers for tests or writing assignments assigned as in-class or one-night homework assignments in a single draft.

When asked about his familiarity with technology, Tyler reported that he was “very comfortable” with widely used technologies (desktop computer, laptop computer, Internet, flash drives, digital cameras, scanners, and MP3 players). He also indicated that he was “very comfortable” with software often used in an educational setting (word processing software, presentation software, spreadsheet software, database software) and was “very comfortable” with the operations of course management systems, email programs, and various Internet browsers. His familiarity with other hardware, software, and applications was more varied, as shown in Table 4. Tyler’s self-reported past uses of technologies on the background survey (Table 5) reflect familiarity with audio and video production technologies such as Audacity and iMovie. Interestingly, although Tyler indicated on his survey that he had created a video using iMovie or a similar program, in his interview at the end of the semester, after completing his digital autoethnography, he reported that he had not created such a video previously. When asked about the discrepancy, he responded that he had uploaded video into iMovie before “to see what the program did,” but he had never manipulated video or composed his own video using the program. He explained that this course project really
expanded his knowledge of the program, and made him think differently about what software and applications he really knew how to use.
Table 4. Tyler's self-reported familiarity with various technologies

<table>
<thead>
<tr>
<th>Technology</th>
<th>Very comfortable</th>
<th>Comfortable</th>
<th>Somewhat comfortable</th>
<th>Uncomfortable</th>
<th>I know what this is, but I’ve never used it.</th>
<th>I don’t know what this is.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web design software (i.e. Dreamweaver, CS3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Blogging technologies (i.e. Blogger, Wordpress, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Smartphones (iPhone, Android-based phones)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Video chat programs (such as Skype)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gaming systems (xBox, Playstation, Wii, etc.)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Photo editing software (Photoshop, etc.)</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screen recording software (Jing, Camtasia, etc)</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Audio recording software (Audacity)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video editing software (Adobe Premiere, Sony Creative software, Nero 10, Final Cut, iMovie)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
### Table 5. Tyler's self-reported past uses of technology

<table>
<thead>
<tr>
<th>Activity</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Created a presentation using Powerpoint</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Created a presentation using a web-based program such as Prezi, Slide Rocket, Empressr, or similar program</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Participated in a video chat using Skype or a similar application</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Edited photos using a cell phone application such as Instagram</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Edited photos using Photoshop, Picasa, GIMP, or similar program</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Added content to a content-sharing service such as Pinterest or ShareThis</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Created audio content (music, podcasts, etc.) using Audacity, Garageband, or a similar program or application</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Created videos using a computer-based application such as iMovie, Movie Maker, Adobe Premiere, Sony Creative software, Nero 10, or Final Cut</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Uploaded videos to YouTube</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Created a multimedia blog using Tumblr or a similar platform</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Added information or revised existing information on a wiki such as Wikipedia</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Created a mash-up</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Created animated multimedia content using Adobe Flash, Anime Studio, or similar program</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Created and launched a website</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

#### Overview of Tyler’s Screen Capture Videos

Over the course of the study, I received twenty different screen capture videos from Tyler. These videos represent work on eleven separate days, beginning on November 6 and continuing through November 27. The length of the videos ranged from a very brief eighteen-second video (started at a point when he thought he’d be able to work, but was interrupted immediately and had to stop working) to one lasting eighty-six minutes and thirty-six seconds, recorded on November 25. The total screen-capture recording time for all of the videos is 14 hours, 31 minutes, and 1 second. Table 6 shows the dates, times of day and lengths of each screen capture video. Please note that times of day and running length of the videos may not be equivalent, as the participant paused the recordings on several occasions. Also note that some the work completed on November 26 and November 27, and
in part during the third session on November 25, was the writing of the written reflection, not work on the autoethnography video.

Table 6. Dates and lengths of Tyler's screen capture recordings

<table>
<thead>
<tr>
<th>DATE</th>
<th>TIME OF DAY</th>
<th>LENGTH</th>
<th>DATE</th>
<th>TIME OF DAY</th>
<th>LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 6 Tuesday</td>
<td>5:46 pm-6:44 pm</td>
<td>0:43:51</td>
<td>November 22-A Thursday</td>
<td>1:13 pm-1:35 pm</td>
<td>0:21:37</td>
</tr>
<tr>
<td>November 8 Thursday</td>
<td>5:57 pm-7:06 pm</td>
<td>1:01:57</td>
<td>November 22-B Thursday</td>
<td>7:24 pm-8:45 pm</td>
<td>1:20:40</td>
</tr>
<tr>
<td>November 12 Monday</td>
<td>9:15 pm-9:17 pm</td>
<td>0:02:51</td>
<td>November 22-C Thursday</td>
<td>9:36 pm-10:02 pm</td>
<td>0:26:10</td>
</tr>
<tr>
<td>November 13-A Tuesday</td>
<td>10:15 pm-11:53 pm</td>
<td>0:37:06</td>
<td>November 24 Saturday</td>
<td>10:12 pm-11:23 pm</td>
<td>1:11:27</td>
</tr>
<tr>
<td>November 13-B Tuesday</td>
<td>12:35 pm-12:43 pm</td>
<td>0:08:59</td>
<td>November 25-A Sunday</td>
<td>9:05 am-10:16 am</td>
<td>0:55:47</td>
</tr>
<tr>
<td>November 13-C Tuesday</td>
<td>1:48 pm</td>
<td>0:00:18</td>
<td>November 25-B Sunday</td>
<td>5:06 pm-7:06 pm</td>
<td>1:26:36</td>
</tr>
<tr>
<td>November 13-D Tuesday</td>
<td>4:55 pm-5:19 pm</td>
<td>0:24:06</td>
<td>November 25-C Sunday</td>
<td>7:51 pm-8:43 pm</td>
<td>0:31:54</td>
</tr>
<tr>
<td>November 20 Tuesday</td>
<td>10:04 pm-10:51 pm</td>
<td>0:37:54</td>
<td>November 26 Monday</td>
<td>6:54 pm-10:04 pm</td>
<td>1:23:36</td>
</tr>
<tr>
<td>November 21-A Wednesday</td>
<td>2:28 pm-2:40 pm</td>
<td>0:12:30</td>
<td>November 27-A Tuesday</td>
<td>9:38 am-11:25 am</td>
<td>1:22:16</td>
</tr>
<tr>
<td>November 21-B Wednesday</td>
<td>7:15 pm-9:32 pm</td>
<td>0:49:04</td>
<td>November 27-B Tuesday</td>
<td>12:43 pm-1:35 pm</td>
<td>0:52:22</td>
</tr>
</tbody>
</table>

November 6th and November 8th were dates when the class met in the Learning Commons area of the library while the instructor held individual progress conferences with students. The work screen captured on those two dates was work completed during the scheduled class meeting. Tyler’s conference was held near the end of class on November 6th.

The only work he had completed in iMovie prior to November 6th was during the in-class iMovie workshop on October 30th (which he did not screen capture), and he did not maintain
that work in his final video. Of the total time screen captured, 10 hours, 52 minutes and 47 seconds was devoted to the scripting and composing of the autoethnography video itself. As evidenced in Table 6, much of that work (7h:53m:39s) took place over the Thanksgiving holiday (the night of Tuesday, November 20th through Sunday, November 25th). This held true for all of the participants in the study. The remaining 3 hours, 38 minutes and 14 seconds of screen capture shows work on the written reflection. Tyler’s written reflection was due in class on Tuesday, November 27th, the first night the videos were screened in class.

Categories in the visual data were defined at the level of action. In their discussion of how to analyze video capture data, Geisler and Slattery (2007) explain “action in video capture is inferred from changes between frames” (p. 193). Actions address the question of what the writer is doing, and “represent constellations of operations, tool, and artifact” (Geisler & Slattery, 2007, p. 196). The visual data from Tyler’s screen capture reveal three categories of action related to invention and decision making:

1) interacting with classmates or the instructor,
2) scripting
3) searching for materials;

and seven categories of action related to assembling the video:

1) exploring the technology,
2) adding still images,
3) adding audio,
4) adding video,
5) adding citations, titles, captions, and credits,
6) manipulating visual effects, transitions, and timing, and
7) cross-checking against the script.

Actions that were off-task or unrelated to the composition of the video were coded in a separate category, as they occurred both during the invention and the assembling phases of work. In total, 248 separate actions were coded. Figure 8 shows how these 248 separate actions break down into the themes “Invention and Decision Making,” “Assembling the Video,” and “Off-Task or Unrelated Actions.”

Figure 8. Number of actions within themes in Tyler's screen capture recordings.

Figure 8 makes it apparent that the frequency of Tyler’s actions was fairly evenly divided between “Invention and Decision Making” and “Assembling the Video.” Of the 248
separate actions coded, 96 (or 39%) were actions of invention, while 90 (or 36%) were actions of assembly. Roughly 25% of the actions, or 62 actions, were off-task actions.

**Actions Related to Invention and Decision Making**

The theme “actions related to invention and decision making” encompasses categories that describe any action related to discovering the argument and planning for the production of the video. In other words, categories in this theme are a part of the conceptualization of the video, rather the actualization of the video. These actions involve engagement others (“interacting with classmates and the instructor”), scripting, and searching for material for the video (including intertextual, source material as well as visual material.) Ninety-six separate actions in three categories were coded in this theme. Figure 9 shows the number of actions within each category in this theme.

![Figure 9 Number of actions within categories in the theme of Invention and Decision Making](image)
Figure 9 shows that within the 96 actions identified in the theme of Invention and Decision Making, 5% of those actions, or 5 actions, involved interaction with classmates or the course instructor. Actions were nearly evenly divided between scripting (47% or 45 actions) and searching for material (48% or 46 actions).

*Interacting with classmates and the instructor*

Five times within the scope of his work composing his video, Tyler engaged in either synchronous or asynchronous interaction with classmates or the instructor. These interactions were mediated through technological tools such as Facebook and email. On November 6th, Tyler engaged in synchronous interaction with three different classmates via separate Facebook chats regarding the project. In an interaction between Tyler and Amanda, the discussion centered on whether or not they were allowed to use music downloaded from iTunes in their videos. In the interaction between Tyler and Morgan, Morgan sent Tyler a link to the *Encyclopedia of Educational Psychology*, a resource she believed might be useful to him. After opening the link and taking a quick look, Tyler responded to her by saying “thanks.” The exchange between Andrew and Maryam was less substantial, but still project-focused. Tyler asked Maryam how her project was going, and she responded that she was having difficulty getting started. In an informal conversation with me, I asked Tyler if these interactions via Facebook chat occurred regularly. He responded that they did occur with some frequency, most often at times when it was clear that everyone was working on a project for the class, such as just before a deadline. The November 6th interactions took place during one of the class periods scheduled in the Learning Commons of the library, when all of the participants were to be focused on their projects. One interesting aspect of these
interactions is that all of the students involved were participants in this study. There was no recorded interaction between Tyler and any student in the class who was not involved in the study.

Tyler also engaged in asynchronous interaction with the class instructor, facilitated through university email. On November 20th, Tyler opens an email sent to him from the course instructor with a link to an article in course reserves. The instructor suggested that he take a look at this article as a potential source, and Tyler did so. On November 22nd Tyler composed an email to the instructor requesting feedback on the script for his video, attached the file to the email, and sent it. The fact that all of the technologically mediated interaction between Tyler and the instructor is asynchronous, with some delay between the sending and the receiving of messages, and facilitated by email, while in contrast, all of the technologically mediated interaction between Tyler and his classmates is synchronous and facilitated by Facebook, may suggest that these two types of interaction serve different purposes. When tracking the tools of composing, it is important to consider the differences in tools that facilitate collaboration, and how these tools may be utilized to meet different needs of the composer, or how they may meet the same needs in different ways. Tyler’s synchronous interaction with his peers occurred at a very early stage in his composing, when he and his classmates were struggling to get started on the project. This interaction seems to serve a purpose of general support and camaraderie. His asynchronous interaction with his instructor occurred later in the project, and each exchange addressed a more specific need, the need for a link to a source in course reserves or the need for feedback.
Scripting

Scripting ranks third among the most saturated data categories to emerge from the screen capture. Forty-five actions were coded as scripting, out-numbered only by off-task actions (62 actions) and searching for material (46 actions). However, this level of saturation may be a bit understated in terms of the actual time devoted to this action due to the method of coding the screen captures. A new excerpt was generated and a code applied each time the action changed in the screen capture. Because the action of scripting is often sustained, this action may not have generated as many excerpts as other actions that shifted more frequently.

In the context of this study, scripting is defined as the production of an original document that includes the text for the video, as well as any production notes or directions. Tyler’s scripting for this project was exclusively verbal. He word-processed his script in Microsoft Word, and included notes about the images he wanted to use rather than inserting the images themselves. In his interview, Tyler indicated that he needed to develop a script for his video so that he would have a plan for proceeding. Based on the screen capture data, Tyler’s scripting involved four actions including a) drafting original text, b) revising existing text, c) incorporating source material, and d) adding in production notes or reminders to himself.

Drafting

Tyler’s actions were defined as drafting original text when he had his script open in Microsoft Word and was adding text to the script that was his original material, not material he was incorporating from a source. This drafting occurred between November 6th and November 22nd. After November 22nd, no new, original material was added to the video script. (Additional material from sources was added after this date, but those additions were
coded separately.) An example of the type of original content added to the script is Tyler’s discussion of his own experience as a competitive runner. Figures 10 and 11 offer information for comparison that shows the addition of original material over the course of a single screen capture recorded on November 20th.

Figure 10. A screenshot from the 00:00:00 mark of the November 20th capture.
In Figure 10, the first sentence visible on the screen reads “I have been running competitively since 8th grade and this love of running is what motivated me to do this video on runners as a group.” In Figure 11, that same sentence, in a shortened, revised form, appears halfway down the visible page (“I have been running competitively since the 8th grade track season”). In the ten minutes of elapsed time, Tyler has added information to further develop that idea:

Since then I ran track, cross country, and just run for fun over the summer. While running I have discovered that all runners have something in common. Despite being members of a group, they are all competitive individuals. This mentality is different from other athletes because they enjoy competing individually rather than as a team.
While ten minutes may seem like a long bit of time to add only three sentences of text, this fluency was characteristic of Tyler’s drafting when he worked on the video script. Although there is no visual or auditory record of the other activities in the room at the time Tyler was drafting that might have been distracting, he reported to me that his “off task” behavior generally involved activities that I could see on the screen (such as watching video on YouTube, as will be discussed later in this chapter.) He explained that his composing often progressed in this manner when he was less certain about what he wanted to say. His writing progressed in “fits and spurts,” with moments of nothing but a blinking cursor, followed by the rapid addition of text. The addition of text was often followed by equally rapid deletion and re-phrasing of that text. Also, several other actions intervened during this drafting. At the 00:01:36 mark, Tyler deleted the end of the initial sentence (an action of revising). At the 00:05:31 mark, Tyler had composed the second sentence as it appears in Figure 9. He worked on this sentence for four minutes, adding and then deleting phrases. At the 00:07:10 mark, Tyler briefly left the script and completed an unrelated search on the Internet. He returned to the script, only to shift at 00:09:39 to Facebook, briefly. None of these interruptions were significant in terms of time; each lasted only seconds. However, they did interrupt his drafting. Each excerpt of screen capture identified as drafting progressed in much this same manner.

Revising

The second subcategory of scripting is that of revising existing text. In the context of this study, revising existing text is defined as making changes to original text that was previously drafted. As the discussion of the first sentence in Figures 8 and 9 evidences,
revision occurred in concert with drafting. Although this can make distinguishing “drafting” from “revising” difficult, for this study I identified as revising any action that involved changing text that was not added immediately prior to a change being made. Tyler often drafted new material in one section of the script, and then revised previously drafted material in another section of the script. As Tyler described in his interview, his script was always in flux. Each time he worked on the script, he deleted material he had previously written, reworded phrases and sentences, and moved text from one place in the script to another. For example, Figures 12 and 13 show the same paragraph at two different time marks during Tyler’s first work period on November 21st. Figure 12 shows the paragraph as drafted during an earlier work session, while figure 13 shows how he reworded sentences in the paragraph.

Figure 12. Screenshot from the 00:10:55 mark of the first November 21st capture.
Figure 13. A screenshot from the 00:11:44 mark of the first November 21st capture.

In Figure 12, the paragraph reads:

One of the best aspects of running is how anyone can start competing and running but not everyone can keep it up. This acceptability and ability to turn people away are essential in establishing runners as a legitimate group. The people who are not able to stick with running are not runners and therefore not part of the group.

Figure 13 shows that same paragraph less than one minute later, after rewording revisions. It reads:

One of the best aspects of running that I have enjoyed is how anyone can start competing and running but not everyone can keep it up. This acceptability and ability to turn people away are essential in establishing runners as a legitimate group. The Social Identity Theory says
people who are not able to stick with running are not runners and therefore were not considered part of our group.

While many of Tyler’s revisions involved rewording, other revision activities involved reorganizing information by moving existing information around in the script. Figure 14 shows Tyler in the act of cutting a paragraph from his script. The text discusses the psychological benefits of running such as stress reduction. This information is pasted moments later to a different place in the script, but then is reworked entirely. Figure 15 shows the results of this reorganization and reworking.

Figure 14. A screenshot from the first November 21st capture, showing the "cutting" of material that is to be relocated.
Figure 15. A screenshot from the first November 21st capture, showing the new location of previously "cut" material.

Figure 15 shows that the information about the psychological benefits of running has been incorporated into a later paragraph in the script, with a planned reference to source material, indicated by “(Insert Name Here),” that had not been added yet.

Incorporating source material

Incorporating source material is a third subcategory of the larger category “Scripting.” According to the project assignment sheet, students were required to incorporate material from a minimum of three scholarly sources and one popular source into their autoethnographies. Tyler integrated source material into his script on two occasions, the work
session on November 12\textsuperscript{th} and the second work session on November 21\textsuperscript{st}. To integrate source material, Tyler shifted back and forth between separate internet tabs displaying the sources (including an ebook from the library and information on three websites) and his script, sometimes cutting and pasting excerpts from the sources into his script which he then paraphrased, and at other times paraphrasing from the start. Figure 16 is a screen shot taken from the November 21 screen capture showing the e-book (from the library website) open on the right, and the script open on the left in Microsoft Word. This screen shot was captured at a moment of transition between the two documents, as Tyler was moving from the e-book to the script to insert information. Geisler and Slattery (2007) refer to this simultaneous use of tools as “artifact ecologies,” defined as “collections of artifacts brought into play during a given action” (p. 196).
Figure 16. A screenshot from a November 21st capture showing the artifact ecology of source material and script.

Artifact ecologies including sources and a draft certainly are not limited to digital, multimodal compositions, but it is useful to consider the part these ecologies play in Tyler’s scripting process and how he transitions back and forth between them as he works. Tyler seems to read a section of the source, then return to his script to add in information. Although this information is not always a paraphrase or quotation from the source material, it is likely that his exposure to the source text influences his generation of ideas for the script.
Adding in production notes and reminders to self

The last subcategory to emerge from the screen capture data related to scripting is the action of adding in production notes and reminders to self. Early in his scripting, Tyler often added notes into the script regarding the types of visual elements that he hoped to include in the video. Figure 17, a screen shot from the November 6th screen capture, shows two such notes very early in the script, which Tyler had just added. The first reads “picture of runners,” and the second reads “picture of dirt trail.” Tyler distinguished these production notes from the remainder of the text by both placing them in parentheses and also boldfacing them.

![Figure 17. A screenshot from November 6th showing production notes.](image)

Later in his work, Tyler would make changes to the types of images he planned to include, but these production notes served as reminders of his thinking as he drafted his script. In addition to notes addressing visual elements, Tyler would include reminders to himself about
the types of content he planned to include in his video, as well as placeholders in the script for material he did not yet have. Figure 18, a screen shot from the November 8th screen capture, shows several of these reminders as well as a placeholder.

Figure 18. A screenshot from November 8th showing reminders and placeholders.

In boldface, Tyler has inserted the placeholder “insert interview here” as well as a later placeholder “interview with a serious runner.” Between these two placeholders are reminders regarding content, including “studies about benefits/requirements of being a group” and the accompanying notes “source here” followed by “video of a group or pictures of a group,” followed by the more direct reminder “talk about the types of more serious runners.” In an informal conversation with me about these screen captures, Tyler indicated that early in the drafting of his script he had ideas about what to include in his video, and he was afraid of “losing” those ideas. He felt that it was important to keep a record of those ideas, even if he
discarded them later. He did not, in fact, end up interviewing the serious runner (“Quentin”) named in this segment of his script, but instead interviewed a female.

*Searching for Material*

Searching for material is the second most saturated category to emerge from Tyler’s screen capture data, with 46 separate actions. This category divided evenly (based on the number of times each code was applied to an excerpt) into the subcategories searching for source material and searching for visual material (23 separate actions each); however, it is not as evenly divided in terms of time.

*Searching for print source material*

“Searching for print source material” is used to describe any action involving the location of scholarly or popular sources that might be cited in the video. Tyler searched for source material for his video during four separate work sessions, including November 6, 8, 20, and the second work session on November 21. Some searching for sources took place at times when Tyler was not screen recording, however, as on two occasions when the screen capture video begins, there is an open tab showing search results, and several sources are cited in his video that do not show up anywhere in his screen capture.

Early in his work, Tyler spent quite a bit of time searching for sources, particularly on November 8th. On November 8th, Tyler spent approximately 30 minutes, or one-half, of his total work time (01h:01m:57s) searching for sources. This included Internet searches for “runners as a group” and “runners in sociology” conducted via Google Chrome, as well as searches for “sociology groups” and “social groups” through the university library, involving both the general collection and the databases. Tyler considers the work of a Pomona College
Sociology professor, located through his Google search, as well as an e-book from the library titled *The Psychology and Politics of the Collective*. Tyler’s searching at this point, although sustained, seems to lack definition and purpose; he seems to be “grazing” rather than conducting a focused search. This may be an indicator that, at this early stage of the project, he is still uncertain of what he hopes or needs to find in his sources for them to be useful to him. None of the sources located during this period of searching find a place in the final video.

One thing I found interesting as I watched Tyler’s search for sources is his method of navigating to the university library’s website. Instead of going to the university homepage and clicking on the link to the library, or typing in the library URL directly, Tyler searched Google for the library. When I asked him about it later (in casual conversation), he laughed and responded that he never thought about “getting there” [to the library website] through the university’s homepage. He explained that conducting a Google search was his “go to” method for locating anything he needed. This came up again on November 20th. Once again, Tyler conducts a Google search to get to the library. Even more interesting is that while looking at an article the course instructor has placed on reserve for him (through the library), he finds an article listed in the bibliography that is of interest. The article is from an academic journal, *Social Psychology Quarterly*. Although he already has the library website open instead of searching the library for the article, he “Googles” the title of the article. He was not able to find the article through his Google search, but would have found it had he searched the university library, as the library carries a subscription to that journal.
When searching for source material, Tyler shows hesitation. He seems unsure whether to search the library, or to search Google. Although he seems to have a clear preference for Google, as he searches Google more often than the library, and he always searches Google first, there is a sense that he understands he should search the library, as well. He almost always follows a Google search with a library search, though not necessarily searching for the same search terms.

Tyler seems to struggle with his choices of search terms, whether he is searching Google or the library. In each of his sessions of searching, he seems to have difficulty targeting key words that might lead to more fruitful search results. His search terms on November 8th, “runners as a group,” “runners in sociology,” and “social groups,” for example, are not specific enough to return any results that he would ultimately find useful. He also searches for “sociology groups” and “people and groups.” On November 20th, the next time he gives significant attention to searching for sources, he searches on Google for phrases such as “runners [sic] mentality” and later “runners [sic] mentality as individuals.” He next searches the library for “sociology of athletes.” His almost immediate dismissal of the results of these searches indicates his displeasure with the results, but he does not pursue additional searches with different search terms until fifteen minutes later, when he searches Google for “psychology of runners.” Although he does briefly look at one of the results returned from that search, he dismisses it, as well. He then searches for “runners are individualistic,” and similarly dismisses the results of that search. In the interim fifteen minutes is when he looks at the article on reserve and attempt to find the article from the Social Psychology Quarterly through Google.
At some point between his work session captured on November 20\textsuperscript{th} and his second work session captured on November 21\textsuperscript{st}, Tyler located the e-book through the university library that would serve as one of his primary sources in his video. The e-book, titled \textit{Sport Psychology}, is open on the screen when he begins the 7:15 pm recording on November 21\textsuperscript{st}. He also located a website, \textquotedblleft The myth of the runner\textquotesingle s high revisited through brain imaging,\textquotedblright at a point that was not captured, and during this same work session he navigates to that source through a link that he has saved on his script. The sources that he has found in these unrecorded periods are sources that do get included in the video. Further, one book and one scholarly article that never appear in his screen capture at all are cited in his video.

**Searching for visual material**

In addition to searching for source material, Tyler also searched for visual material including still images and video to include in his autoethnography. Searches for visual material were spread fairly evenly over the period of Tyler working on his video. He initially searched for visual material on November 6\textsuperscript{th}, and conducted his final search for visual material during his second work session on November 25, the day before the project was due. Tyler incorporated personal photographs, which he searched for using the \textquotedblleft Finder\textquotedblright file manager on his Macbook Pro. He also used other photographs, graphics, and images that he located through \textquotedblleft Google Images\textquotedblright searches. Finally, he incorporated a short video clip from an episode of the television series \textit{How I Met Your Mother} that he located on YouTube. Initially, he also planned to include a video clip from \textit{The Big Bang Theory}, and he searched YouTube for this clip on two different occasions, once on November 13\textsuperscript{th} and once on November 21\textsuperscript{st}. However, the clip was never added to his video. He told me he realized that
in order for the clip to make sense, he needed to include over a minute of video, and he did not have that time to spare in his video.

In contrast to his searches for source material, Tyler did not spend long periods of time searching for visual material. He seemed to have a stronger sense going into each search exactly what he was looking for, and he made his selections of visual material quickly. Image searches were started and completed generally in less than thirty seconds. Further, the action of searching for visuals seemed more familiar and more comfortable to him, and he was better able to identify search terms that led to successful searches. There was no hesitation in his searches for images or for video. He went directly to the Google Images search page or to YouTube, and entered search terms that immediately returned results that met his expectations.

**Actions and Operations of Assembling the Video**

“Assembling the video” is used to describe any action involved in actually putting the video together. Categories of assembling the video include

1) exploring the technology,

2) adding still images,

3) adding audio,

4) adding video footage,

5) adding citations, titles, captions, and credits,

6) manipulating visual effects, transitions, and timing, and

7) cross-checking with the script.
A brief orientation to the interface of iMovie is useful to facilitate the discussion of these results. Figure 19 shows the iMovie interface with its various spaces or “frames” labeled.

Figure 19. The iMovie interface, labeled.

The project library (not shown in the picture, but indicated by the arrow in the upper left corner) is the repository for any video projects that have been generated within iMovie. It is, basically, the in-program file manager for projects developed within the program. To the immediate right, the project storyboard is where the actual video is composed. This is the space where raw visual and audio footage is added into a movie, and then edited into a final product. Again to the immediate right, the viewer is the section of the interface where the element that is actively selected is shown larger. It is also the space where videos are
watched in playback. Just below the viewer, the lower right section of the interface is the event browser where objects that have been imported into iMovie but not yet added to the active project storyboard appear. In this space, iMovie automatically divides video footage into thumbnail frames or filmstrips. This allows the user to easily select only those frames he or she wants to move into the storyboard. To the left of the event browser is the event library. Any footage imported into iMovie is stored in this repository, whether or not it has ever been added to a project storyboard. The distinction between this file manager and the project library is that the event library stores all footage, while the project library stores only that footage that is a part of a project storyboard. The toolbar in the center of the interface includes icons that link to various tasks within iMovie, such as cropping and adjusting visual elements, recording voiceover, adding music, adding titles, adding transitions, and adding maps and backgrounds. When an icon is selected, the task frame opens in the lower left hand corner of the interface, narrowing the event browser. (This can be seen in Figures 20 and 21, below. The “Title” task frame is open in the lower left hand corner in these two screen shots from Tyler’s screen capture.)

*Exploring the technology*

Actions identified as “exploring the technology” include the writer engaging with the technology in such a way that it is obvious that he or she is “figuring out” how to make the software complete a desired operation through trial and error, searching toolbars and menus, or consulting help. Over the course of the nearly eleven hours of work composing his screen capture, Tyler engaged in action identified as exploring the technology seven times. Each of these actions took place in his early work on the video, on November 6th and on November
13th. Actions involved trial-and-error operations such as exploring the iMovie toolbar to learn what each icon represented, browsing and testing various sound effects, browsing and trying out visual effects and transitions, and learning how to manipulate those effects and transitions. For example, in his work on November 6th, Tyler spent roughly ten minutes adding and removing various visual effects from an image that he previously added to his video before settling on the “day into night” video effect. After adding this visual effect, he spent time learning how to manipulate the “Ken Burns” effect\(^\text{15}\) to gain the result he wanted, moving from a tight focus to a wide focus. On November 13th, Tyler spent approximately five minutes exploring and previewing the sound effects pre-installed in iMovie, including the iLife effect “acoustic sunrise” and the iMovie effect “walrus roar.” He also explores the iTunes lists. Although Tyler ultimately decided not to include sound effects or music in his video, he explained that this exploration was beneficial, as he learned that anything he added to his iTunes library on his hard drive was automatically available to him in iMovie, and that knowledge was of benefit when he later needed to import video from an interview he conducted via Skype and recorded using Camtasia.

Tyler also engaged in exploratory actions that involved consulting help and exploring applications outside of iMovie. On November 13, Tyler test-recorded a voiceover in iMovie. After listening to the recording, he was not pleased with its quality, and he deleted it. Immediately after deleting that recording, he searched the Internet for “how to record MP3

\(^{15}\) The “Ken Burns” effect, named after American documentary film maker Ken Burns, is a panning and zooming motion effect applied to still images in video. iMovie allows the user to adjust the zoom on a still image from a tight to wide focus (or vice versa), and/or to allow the focus to “pan” across the image. This effect is the default motion effect in iMovie for all still images, though it can be removed or changed.
on a Mac.” After perusing the search results, he navigated to an ehow.com technology site, and skimmed the information there. This information suggested that he should use Audacity. He immediately downloaded Audacity, and completed a test recording using that program. Throughout the remainder of his work on the video, Tyler recorded all of his voiceover narration in Audacity.

While composing his video, Tyler became frustrated by the need to be able to see several windows of information on his computer screen at the same time. While searching for applications for something unrelated to his digital autoethnography, Tyler learned of the Air Display application that allows a user to connect an iPad to a Macbook and use the iPad as a dual monitor. He believed that this would benefit his work on his video. His early attempts at using this technology are recorded in his screen capture.

Over the course of his work on the digital autoethnography, actions that serve as examples of Tyler exploring the technology become sparse or not apparent at all. This evidences his growing comfort level with the software.

Adding still images

Although Tyler’s search for images was fairly evenly spread across his workdays, the action of adding those images into the video was largely clustered between November 22nd and November 25th. This corresponds to Tyler’s most intensive period of work on the video. He did add three images to his video during his work time in the Learning Commons on November 6th. He added a globe, a map, and an image of Pheidippides, an Athenian runner.

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16 Audacity is free, open-source software for recording and editing audio. It can be downloaded from the Internet, and is available for all operating systems.
However, none of these images were retained in his final video. There are two possibilities to explain this. First, it may be that the addition of these images was more about trying out the software than actually composing the video. A second possibility is that Tyler initially believed these images would be useful, but his intentions changed through an ongoing process of invention, resulting in these images being no longer useful.

The action of adding images was fairly straightforward. If Tyler had previously searched for, found, and saved the image, he located it using the “Finder” file manager, then used the “drag and drop” feature to move the image into the iMovie project storyboard. If he had not previously searched for the image, then he searched for the image, downloaded it into his “downloads” folder, and used the drag and drop feature to move it into iMovie. Figures 20 and 21 are two screen shots from a segment of screen capture showing Tyler locating an image in his downloads folder and dragging it into the project storyboard.
Figure 20. Tyler selecting an image from his downloads folder.

Figure 21. Tyler dragging an image from his downloads folder into the storyboard.
In Figure 20, the contents of Tyler’s downloads folder are displayed in an array in the lower left corner of the screen shot. The image Tyler will select is one symbol for cross country running, the letters “CC” with an arrow through the center, surrounded by an oval. In Figure 21, this image has been selected and appears in the lower left of the storyboard frame. Tyler is in the process of dragging this image into his storyboard. Tyler followed this same process for each of the still images that he included in his digital autoethnography. In his final video, Tyler included ten personal photographs (one was repeated) and twenty-nine other images, icons, and graphs.

Adding audio

The only audio Tyler included in his video was voiceover narration. He chose not include any sound effects or music. As he explained in his interview with me, he feared that music would detract from his thesis, and he also felt that it would be difficult to blend music seamlessly into the video.

To record his voiceover narration, Tyler used the free, downloadable software Audacity. As previously noted, he initially attempted to record his voiceover directly into iMovie, but he was not pleased with the quality of the recording, and he sought a different way to record. When recording, Tyler read from the prepared script, which he displayed on his iPad using the Air Display feature that allowed the iPad to function as a dual monitor. In some instances, the Audacity interface was open on his main computer screen while he recorded. On other occasions, his video was open in iMovie on the main display, and the Audacity interface was open on the iPad.
Because of his use of his iPad as a dual monitor, I was only able to actually observe Tyler record audio on one occasion, on November 25th. Because Camtasia® is able to capture only what is displayed on the main computer screen, any action that took place on the dual monitor was not recorded. On this one occasion, Tyler left the Audacity interface visible on the main screen, and I was able to watch the progress of the recording. He completed a successful recording in a single “take,” listened to the playback, and saved the recording, which he then uploaded to iMovie using the drag and drop feature. Figure 22 is a screen shot from the November 25th screen capture showing Tyler recording voiceover in Audacity. Figure 23 shows him adding this voiceover narration into the project storyboard. This audio file, titled “Transition” and is visible as a blue rectangle with a green “plus” symbol under it, can be seen in the upper right of the image highlighted in yellow.
Figure 22. Tyler recording an audio track in Audacity.

Figure 23. Tyler dragging the audio file "Transition" into the storyboard.
On other occasions, when the Audacity interface was moved to the iPad, I was not able to watch the progress of the audio recording. Tyler explained to me that several times when there appeared to be no action during the screen capture, he was actually recording audio. He noted that often, but not always, he was able to record the narration in a single “take,” exactly as I observed.

Adding video footage

Tyler added two different types of video footage to his autoethnography video. He added a brief clip from the television series *How I Met Your Mother*, in which the character Barney Stinson explains how to run a marathon, and he also added original interview footage. Based on the suggestion of the instructor, Tyler incorporated footage from two different interviews into his video. One interview was with a “casual” runner, while the second was with a “serious” runner. Tyler did not screen capture the recording of these interviews. He shared with me that one interview was conducted as a “face-to-face” interview, while the second one was conducted via Skype and recorded using Camtasia. Both interviews were uploaded into the autoethnography video on November 24th. Tyler located the recorded interviews using the “Finder” file manager, and he imported the videos into iMovie. Importing video into iMovie automatically places that footage in the “event library” and displays it in the event browser. This represents a slight difference from the way Tyler added images and audio, which he moved immediately into the project storyboard by dragging and dropping them from their saved location on his computer hard drive. Figure 24 shows the iMovie interface as seen in Andrew’s screen capture immediately after he
imported the interview footage from his interview with the serious runner, Emma, on November 24th.

Figure 24. The iMovie interface just after Tyler imported an interview.

The full interview, frame-by-frame, can be seen in the event browser in the lower right. None of this footage had yet been added to his project storyboard, visible in the upper left. (Tyler minimized the project library so it is not visible in this screen shot.) Also seen in the event browser is the footage from *The Big Bang Theory* that Tyler imported into iMovie on November 22nd, but never added to his project storyboard. One frame of the interview with Emma appears in the viewing frame of the interface, because the interview is the “active,” or selected, element at present.
After the interview footage was added to the event library, Tyler selected the frames of the interview that he wanted to include in his video, and moved them, using the drag and drop feature, into the project storyboard. With Emma’s interview, Tyler moved the entire interview into the video. In the case of the video with the casual runner, Tyler excerpted select frames to include in the main video. Other frames he utilized in what he referred to as an “after interview” that played after the credits of his video.

*Adding citations, titles, captions, and credits*

Tyler was aware of the need to provide citations for source material and images that were not his originals. While he chose to cite source material by including signal phrases in his voiceover narration, he cited the sources of his images by overlaying title slides on the images, and typing in the citations. Figure 25 is a screen shot showing an image of the molecular structure of beta-endorphin in the viewing frame. Tyler has superimposed a title slide on the image, which added the text box that reads “Title Text Here” in the lower part of the image. In the segment of screen capture just after this screen shot, Tyler types in the bibliographic citation for this image.
Tyler added a citation in this same manner for 10 of the 29 images in his video. He did not add citations for the other 19 images. He did not include citations for the photographs that were his originals, and he did not add a citation for the video clip from *How I Met Your Mother*. When I asked him how he determined whether or not to include a citation for an image in his video, Tyler initially seemed flummoxed. After a moment’s pause, he indicated that he included citations for images that he downloaded from a specific website, or images that had an identifiable origin. For example, the beta-endorphin image was taken from a website on the runner’s high that he also used as a source, and so he included a citation for that image. Because he could access the publication information for Dr. Seuss’s *The Sneetches*, he was able to include a citation for the image of the book cover that he
incorporated into his video. He argued that he did not have the same information of the origins of other images, many of which he’d found through a Google Images search, and therefore he did not include citations for them in his video. Although Google makes it easy to see images in context through the “visit page” link, Tyler did not follow the links to navigate to the websites that housed the images. He also did not include citations for those images with his written reflection. Therefore, although he seemed to know that he needed to provide citations for images, he was not extremely thorough in following through with that knowledge.

The final sort of “addition” that Tyler made to his video was the addition of title frames for text, captions, and credits. The addition of this material was accomplished in precisely the same manner as the addition of citations to various images. Title frames were selected from the “Titles” menu, and were placed into the storyboard using the drag and drop feature. Once the frames were positioned in the video, Tyler would type the pertinent information into the textbox. Interestingly, Tyler did not have a frame in his video that displayed an actual title for his digital autoethnography. Instead, he utilized title frames to display his thesis statement, to superimpose the interview questions on the interview footage, and for his final credits. Figure 26 shows the frame from Tyler’s video displaying part of his thesis statement.
Tyler copied and pasted his thesis statement from his script in Microsoft Word into the text box of the title frame in iMovie. In Word, Tyler had the thesis statement underlined in the script, and he explained to me that he made this choice so that it would stand out to him as he scrolled through the script. He did not remove the underlining in iMovie. Further, in the script, his thesis statement includes a second sentence that actually states his claim about runners. For some reason, when he copied and pasted, he did not copy the entire thesis statement. In the video, only two words from the second sentence are displayed, as is seen in the screen shot. When I asked Tyler about this, he was surprised, and suggested to me that he had not noticed this until I pointed it out to him. He had no explanation as to how or why this happened, but it was not intentional. This serves as a reminder that regardless of the “monomodality” or multimodality of a composition, textual quality must always be a consideration.
Figure 27 shows a screen shot from the first interview in Tyler’s video. Using a title frame, he has superimposed the interview question on the video footage.

![Superimposed Interview Question](image)

Figure 27. A screenshot from Tyler's video showing an interview with a superimposed question.

By superimposing the questions onto the video, Tyler was able to avoid having to state the questions in voiceover. He believed that this led to more fluid footage that seemed more natural.

For the credits, Tyler chose the “scrolling credits” title frame in iMovie, and he superimposed this frame over a photograph of a group of runners, including him, nearing a finish line. In his credits, he thanked the two individuals he interviewed, his instructor, a classmate who helped him edit, and identified himself by name as the narrator. He did not include a listing of references in his video.
Manipulating visual effects, transitions, and timing

Adding elements into iMovie represented only part of the challenge of composing the digital autoethnography for Tyler (as well as for the other students). A second challenge involved manipulating the visual effects, adding transitions, and adjusting the timing to ensure that visual and audio elements worked in concert with one another. Tyler did not add transitions between the visual elements of his video. Instead, one element simply “jumped” to another. He did spend a significant amount of time, however, manipulating the visual effects for the still images that he added. As noted previously, the “Ken Burns” effect is the default motion effect in iMovie for all still images. The user can manipulate the starting position and ending positing for the panning, determine whether the zooming moves in or out, or turn the effect off completely. Figure 28 is a screen shot from Tyler’s second work session on November 22nd. He is adjusting the zooming focus on the image of the book cover from The Sneetches.
In this figure, the bright box around the title words *The Sneetches* in the viewing frame indicates the starting focus for the Ken Burns effect on this image. The yellow arrow visible in this box indicates the direction of motion of the effect, and the red box in the dimmed portion of the image indicates the ending focus. Tyler had selected to “zoom out” on this image, from the tight focus on the title to a shot including the two characters and the author’s name. He made similar adjustments to the zooming or panning over most of the still images in his video.

Another type of adjustment that had to be made, one that Tyler described as “the most time consuming” aspect of composing, was the adjustment of the timing to coordinate the audio and video elements in the video. In his interview, Tyler explained that it would have
been much easier had he imported his audio first and started with that as his base, adding images and adjusting them to match the audio. Because he began instead by adding images, he faced adjusting the timing of nearly every image in order to accommodate the run time of the audio. Figure 29 shows Tyler making a timing adjustment of the cross country icon.

![Figure 29. Tyler adjusting the length of an image.](image)

In this screen shot, the “Inspector” window is open on top of the project storyboard, and Tyler is adjusting the duration of the cross country icon shown in the viewing frame. As Tyler expressed, this action took time, because it had to be repeated for every still image in the video to adjust the image duration to match the audio duration. Tyler began this work on November 22nd, and he continued to make timing adjustments through his last recorded work
session on the video on November 25th. This action resulted in the deletion of some visual material, and the re-arranging of other visual elements from one position in the video to another.

*Cross-checking with the script*

The importance of the script to Tyler is evidenced in the back-and-forth, or “cross-checking,” that he regularly engaged in as he was working. Tyler frequently shifted back and forth between the script in Microsoft Word and the video-in-progress in iMovie. While this action began in his work on November 21st, it increased in frequency on November 24th and 25th. Tyler explained that he needed the script to guide his work in composing the video, and the evidence shown in his screen capture supports that he did, indeed, lean on the script as a guide, consistently checking his plan against its fruition. No significant changes were made in either the video or the script during these periods of cross-checking action, suggesting that Tyler simply wanted to ensure that he was adhering to his plan as he developed his video.

*Engaging in unrelated activity*

A final category of action to emerge from Tyler’s screen captures is the category of engagement in action unrelated to the composing of his digital autoethnography. Two things are interesting regarding this category of action. First, the presence of off-task activity in Tyler’s screen captures speaks to probability that his composing processes were unaffected by his participation in this study and the screen capture method of data gathering. Although he might have chosen otherwise, he did not pause Camtasia® when he engaged in unrelated activity, nor did he edit out his off-task behaviors before sharing his screen captures with me. This suggests that the record I have of his actions during composing offers a true picture of
what Tyler was doing when he said he was working on his video. Second, because off-task action was frequent in some of his captures, and non-existent in others, an interesting pattern of activity emerges. This raises questions about Tyler’s work flow that are beyond the scope of this study, but might prove to be an interesting avenue for future research.

The bar graph shown below in Figure 30 shows the number of separate instances of off-task activity in each screen capture from November 6th through November 25th. I did not include the screen captures for November 26th and November 27th, because Tyler was not working on his video on those dates but was instead drafting his written reflection. A separate instance of off-task behavior was counted each time Tyler stopped an action directly related to the video and engaged in an action unrelated to the composing of the video.

Figure 30. Frequency Tyler's off-task activity by work session date.
The screen captures with the highest number of instances of off-task activity are those from November 6th (8 instances), November 8th (15 instances), the first capture on November 13th (8 instances), and the second capture on November 21st (12 instances). All of these work times were in the evening or early night with the exception of the November 13th capture, which was in the morning. November 6th and 8th were the evenings that the class worked in the Learning Commons, while November 21st was the day before Thanksgiving. Each of these three work times potentially involved serious distractions. Further, on the 6th and the 8th, and even on the 13th, Tyler had not yet settled in to a focus for his video, and had not made much progress. He had only worked on his project for a few minutes between the 8th and the 13th, and was, therefore, still in the “figuring it out” stages of his work. At the point he truly begins to make significant progress on composing his video (November 22nd), the off-task actions decrease, and occur only near the end of his work period, whereas previously they were scattered throughout his work time. While there are no off-task behaviors noted on November 12th and in the third work session on the 13th, it is important to note that these captures only lasted 2 minutes, 51 seconds and 18 seconds, respectively.

Off-task actions included seven different types of activity, ranging from actions related to his university education (registering for a course, or checking the status of his application to be a resident assistant) to actions related to Tyler’s passion with video games. He engaged with email, Facebook, Facetime, the university’s student self-service portal for academic information, the comedy and gaming website roosterteeth.com, ebay, YouTube, and iTunes during his off-task times. All of these actions were captured by Camtasia. The two most frequently utilized outlets for off-task behavior were YouTube, where he viewed
footage from the video game *Halo*, and Facebook. During the second work session on November 21st, he spent as much time viewing *Halo* video game footage on YouTube as he expended making progress on his video.

**Summary**

In this chapter, I presented the findings of the screen capture video of a single participant, Tyler. This data supplements, extends and adds dimension to the data reported in chapter three in the form of a moment-by-moment detailed record. Further, this data does not rely on memory nor is it influenced directly by student perception. The screen-capture data allowed careful study at the level of action and operation that was not possible with data from observation, interview, and written reflection. Data reveal that Tyler’s work on the digital autoethnography was divided almost evenly between actions of conceptualization and actions of production or actualization. Data also allow an interesting comparison to emerge between Tyler’s fluency in searching for textual, print sources and his fluency in searching for visual material. These data also raise important questions about the functions of off-task or multitasking behavior in composing processes. In chapter five I draw on the information from this chapter and chapter three to offer overall analysis, implications, and potential directions for future research emerging from this study.
CHAPTER FIVE: ANALYSIS AND CONCLUSIONS

I’d like to return briefly to the quotation from Odell and Prell (1999) included earlier in this dissertation:

What we have needed for at least a decade, and what we must have soon, is a period of vigorous research on composing. Not just writing—composing. To modify a phrase from Richard’s *Philosophy of Rhetoric* (1965), we need studies not solely of ‘the interanimation of words,’ but the interanimation of words, visual images, and page (or screen) design. (p. 295)

As the review of literature in chapter one evidences, scholars have conducted vigorous research on multimodality within Composition Studies, and this work continues to take place. However, as many scholars have argued (Brooke, 2009; DeVoss et al., 2005; Prior, 2004; Shipka, 2011; WIDE, 2005; Wysocki, 2004b) what is still lacking, now over a decade later, are empirical studies that investigate a specific question posed by Odell and Prell (1999): “How does this interanimation affect the composing process?” (p. 295). The results of this study begin to respond to that question, and to the call for experiential and experimental studies that ground theoretical and pedagogical work (Anson, 2008; Haswell, 2005). What is needed, specifically, are studies that examine the writing processes of students working to compose multimodally, studies that will allow us to compare their processes with the processes of more experienced multimodal composers. Such studies are needed to allow us to determine the skills and strategies students bring to such composing situations, and what tools, skills, and approaches we need to help them develop. Such studies
are needed to inform curriculum design and the development of appropriate instructional strategies.

This study offers a particularistic and descriptive picture of six students composing a multimodal, digital video, and it illuminates how students approach composing multimodally within the context of a class assignment, how they make decisions regarding their compositions, and how they navigate the tools of inscription necessary to complete such work. The functions of the categories coded demonstrate that in significant ways, the conceptualization or design phase of multimodal composing is similar to the invention phase of more traditional alphabetic composing, involving many of the same influences on invention. Differences are apparent in the textual production phase, and yet, the rhetorical principles underlying the observed production processes are familiar to those versed in Composition Studies. In this chapter, I offer analysis of the data from Chapters 3 and 4 and discuss the implications of that analysis in relationship to composition pedagogy and the place of multimodal composition in Composition Studies. This research illuminates the complex rhetorical decisions made by students engaged in multimodal composing and helps to refine current models of composing to accommodate more complex tools used in multimodal production. Further, these findings can be used to assuage concerns about whether multimodal assignments in first-year composition curricula are actually meeting the instructional goals of teaching composition. Additionally, I acknowledge the limitations of this study and offer potential directions for future research.
Overview of the Students’ Processes

The categories emerging from the observation, interview, written reflection, and screen capture data indicate that students’ multimodal compositions are developed within a complex and interrelated system of influences, acts, operations, and tools. Scholars such as Cooper (1986) and Brooke (2009) refer to the relationships within the system as an “ecology,” while others (Prior, 2004; D. Russell, 1995, 1997) refer to these relationships as “activity systems.” Cooper (1986) writes “writing is an activity through which a person is continually engaged with a variety of socially constituted systems” (p. 367). She goes on to explain, “the ecological model postulates dynamic interlocking systems which structure the social activity of writing” (p. 368). Kuuti (1996) defines activity theory as “a philosophical and cross-disciplinary framework for studying different forms of human practices as development processes, with both individual and social levels interlinked” (p. 25). She further explains that activity theory “proposes a strong notion of mediation—all human experience is shaped by the tools and sign systems we use” (Kuuti, 1996, p. 10). D. Russell (1997) explains that different motives (course outcomes or assignment requirements, for example) “condition participants’ actions in important ways” (p. 507).

Activity theory offers an appropriate lens through which to analyze the results of this study, as it foregrounds the mediating nature of the tools utilized to achieve a desired outcome. As will be discussed, one potentially significant difference between multimodal composing and writing is an increased engagement with a wide variety of technological tools that influence and shape the resultant composition. It is important, then, that those tools are a focus for analysis. Further, activity theory reflects the broadened focus of post-process
scholarship, including a wide range of contextual factors that affect composing, and acknowledging the potential for competing motives within complex activity systems. Finally, the goal of activity theory is description, not prediction or prescription. Early process work drew criticism from theorists who claimed, as did Olson (1999), that process theorists were attempting to construct a “master theory” of writing. However, this claim masks differences in writing processes discussed by these researchers as well as differences in the theoretical grounding in the work of the process movement. Because activity theory acknowledges that any change in the activity system affects the entire system, analyzing composing processes using activity theory analysis stresses the descriptive nature of the analysis as an analysis that may not generalize beyond the particular situation studied.

It is my intention in this analysis to first examine the complex relationships of multimodal composing in the specific context of the single project I observed, involving a close look at the actions, agents and tools involved, as well as their mediating roles. Next, I will examine the two phases of work involved in multimodal composing: conceptualization and production or actualization, focusing on specific items of interest within these processes. Finally, I will explore how the results from this research might be useful in addressing instructor concerns about incorporating multimodal composing into a first-year composition course.

The Complex Systems in Multimodal Composing

As Cooper (1986) notes, all composing takes place within a complex network of socially constituted systems. Cooper describes five systems, including ideas, purposes, interpersonal interactions (or the ways we relate to one another), cultural norms (the structure
of larger groups we are a part of), and textual forms (genres). Each of these systems shapes the writer’s processes as well as the resultant composition. Another way to consider influences on processes and texts is by looking at systems of activity and mapping the subject or agent, the “rules” governing the activity, the tools utilized, the processes or division of labor, the community in which the activity is taking place, and the outcomes. The results of this research show clearly the influence of mediating factors (whether described as “ecologies” or “activity systems”) on students’ composing processes. Adapting Engeström’s (1987) model of the structure of human activity, figure 28 below shows Tyler’s activity system for completing his digital autoethnography video. Tyler was chosen as the subject of this graphic because I have the most complete data on his processes.
Figure 31. Tyler's activity system.

Figure 29 shows Tyler as the subject or agent of the activity (left side), with the desired outcome of a rhetorically sound digital autoethnography video that ultimately not only earns him a good grade, but also serves as an accurate representation of his social group (right side). As Nardi (1996b) explains, the object and outcomes should be the beginning point of analysis, as they precede and motivate any activity. The two desired outcomes of earning a good grade and representing his group accurately reflect two different agent positions held by Tyler, that of student and that of group member. These two outcomes (and agent positions) potentially compete with one another, if achieving one of the desired outcomes results in sacrificing aspects of the other desired outcome. For example, if the assignment requirements (which mediate the grading of the project) conflict with choices
Tyler might make to present his social group accurately, there is discord that must be resolved in the processes of composing. This is, in fact, a conflict that Tyler and his classmates articulated in their discussions of the project, particularly in terms of the allowed length of the video in comparison with the assignment requirements. Because this composing project is situated within a classroom environment with students who want to do well in the class, the students were more likely to sacrifice the desired outcome of representing their group in the way they would like to represent the group rather than sacrificing their grades on the project. To some extent, any model focused on describing composing processes within a course setting and involving school-sponsored writing will represent a mix of the students’ “free” choices and the teacher’s imposed requirements and constraints, admonitions, and instruction; this is the case in this model. The competing outcomes may explain a tension that emerged from the data—a tension between the students’ desire for freedom and their desire for more direction.

Several times within the interviews, students commented on the “freedom” of the project. Tyler commented that he enjoyed working on the project overall, because he perceived that he had “more freedom with it” than with the other projects of the course. He went on to explain that “I liked being able to do pretty much whatever I wanted to with the project creatively. Like you could have had music. You could have … You could have done pretty much anything.” Catherine expressed a similar idea. In her interview, she explained that although the project was “difficult,” she “enjoyed having the freedom – there wasn’t a certain format, you know.” However, although the students appreciated the openness, and the ability to be more creative in the project, they also yearned for more direction. Tyler and
Morgan both discussed wanting to see more sample digital autoethnographies—more videos created by students in response to this specific project. Because this was the instructor’s first time assigning the project, she did not have samples from her own class to share with the students; she did show two samples from another instructor’s course. What is interesting is the conflict inherent in the students both embracing the “freedom” of the project and asking for more specific examples that they might emulate. What I infer from this conflict is while the students did appreciate the more open nature of the project, their concern over adhering to the assignment requirements, and protecting their grades, seemed to outweigh their enjoyment of the project’s openness, pointing to the inherent conflict between the development of independent thinkers and writers and the assignment of grades necessary in a composition course. The desire for specific models to follow may be heightened because of the students’ lack of familiarity with multimodal composing, lack of experience composing in the medium of video, and their (in)abilities to transfer knowledge across genres.

The tools involved in this activity are listed at the top of the triangle (figure 28, above). Tools include not only technology, but also other individuals who helped the students achieve their outcomes, sources that served as intertextual influence, and their own memories. Tools also mediate the activity. In the case of the students’ digital autoethnographies, decisions about the videos were mediated by the affordances and limitations of the software (iMovie, in Tyler’s case), as well as the students’ capabilities to use the software, to locate, read, interpret, and synthesize useful sources, and to effectively draw on other tools including other individuals as well as other technologies to support and facilitate their composing processes. Although students using iMovie did not have a negative
view of the technology, students using Movie Maker felt the software constrained their work. In some cases, this perception may be due to the students’ knowledge of the software rather than the software itself. Students generally found scholarly and popular sources to be useful aids to invention, as well as their interviews. Also, they were resourceful in locating other tools to help them. Two examples are Tyler’s discovery of the Air Display application, and Catherine’s location and utilization of a codec converter.

Tyler’s community of practice includes his classmates, the instructor, his social group, and, since this project is oriented in the discipline of Sociology, sociologists, including the Master’s student who “kickstarted” the students’ work with her class presentation on the first day of the project. Each member of the community could potentially influence the composition of Tyler’s video. The instructor as the assignment designer and the later evaluator had obvious influence. Tyler’s classmates engaged in peer review and served both as the primary audience and as a support network. The presentation by the Sociology Master’s student influenced the students’ early thinking on their projects and impacted their selection of a social group.

In Engeström’s model, the lower right corner of the triangle refers to the division of labor. Because this was an individual project for a class, each student composed his or her own video, and therefore each student was solely responsible (with support from others in the community as well as the tools) for completing the project alone. Tyler’s process work, as well as the work of the other participants in this study, was divided into two phases, a conceptualization phase and an actualization phase. Within these phases of production, Tyler did interact with other individuals, including both students and the instructor, but these
interactions served as aids to Tyler’s inventional work. Interaction served as a mediating tool rather than a division of labor.

As each aspect within the system has a mediating influence on the final project, any change within the system can affect the outcome. Within this study, this is most evidenced in the different perceptions of the project held by the students working with iMovie and those working with Movie Maker. Although the Emerging Technologies librarian described the two programs as very similar, the students received specific instruction in iMovie, but received no comparable instruction in Movie Maker. Therefore students working in Movie Maker may have been less aware of its capabilities. Additionally, if students viewed iMovie as the “preferred” program, they would want to emulate as closely as possible the capabilities of iMovie to ensure that their projects were successful. This single difference experienced by students within this study clearly influenced the students’ overall opinions about their projects. In a larger context, this emphasizes that no two composing situations are the same, and therefore processes utilized in one situation may or may not generalize to another situation.

*Conceptualization and Actualization*

The larger categories of data discussed in chapters 3 and 4 were divided on the basis of influences on invention and acts of composing. However, it is important to remember that invention is an act of composing. Figure 30 offers a reminder of the acts of composing.
Each of these acts represents the different kinds of intellectual work involved in composing. The results of this research suggest these acts of composing are organized into two phases of work involved in the design and production of a multimodal composition. There is a phase of work when the composer is working at a level of conceptualization, and there is a phase of work in which the composer is producing or assembling the video, actualizing the concept developed during conceptualization. These “phases” are not restrictive, linear, or mutually exclusive; they simply name different types of work that are
taking place in the development of a project. As Glenn and Goldthwaite (2008) state in their discussion of content and form and the canons of rhetoric, “separating invention and arrangement is a convenient tool for discussing certain features of process composing, even though the two operations are deeply interrelated” (p. 174). Just as Glen and Goldthwaite found the separation of invention and arrangement useful, the separation of conceptualization and actualization is useful, as well, for describing different types of observable activities involved in composing. Although students’ verbal descriptions of their processes in their interviews and written reflections may suggest linearity, students move recursively between these phases as their project develops. This is evidenced in Tyler’s screen captures. Further, each of these phases involves multiple decisions, acts and operations all of which are recursive and intertwined. Figure 31 offers a diagram of the composing processes, delineated into the phases defined above. It is important to remember that this diagram represents a more detailed and representation of the acts of composing, organized here into the two phases of conceptualization and actualization.
Figure 33. Diagram of the writing process emerging from this study

The top oval of this diagram shows the phase of conceptualization, in which influences on invention such as exigency, purpose, motives, intertextual influences, modal possibilities, audience expectations, interaction with others, knowledge of the tools of inscription, and the students’ own feelings and perceptions of the project influenced the planning and design of their projects. Students were more open to influence on the level of conceptualization, where contextual issues, rhetorical considerations, and intertextual influences came into play. It is at this level that most of the decision-making regarding the project took place. Here, “influences on invention” represents those aspects outside the
composer that influence his or her invention, while “acts of invention” are the observable actions and operations the composer engages in as he or she conceptualizes the project, such as scripting, outlining, or storyboarding.

In “How the Writing Medium Shapes the Writing Process,” Christina Haas (1989) discusses four different types of planning that emerged from her study of the effects of word processing on the planning of writers. Three of these types of planning are seen in this study in the conceptual phase of students’ work on their multimodal compositions. During the conceptual phase, students engaged in process or procedural planning, described by Haas as “instructions the writers give themselves” (p. 193). Tyler’s work on his script includes such “directions to self,” included as reminders of things Tyler planned to do as he produced his video. Students’ conceptual phase of work also included rhetorical planning, which Haas defines as considerations about audience and the rhetorical situation. As they conceptualized their projects, students made decisions concerning modal choices for their videos influenced by their concerns about their audience and the medium of their composition. Finally, students engaged in conceptual planning, which Haas identifies, in part, as generating plans that “guide the creation of the conceptual meaning and structure of the text” including “exploring the topic, developing ideas” and “deciding ‘what to talk about’” (1989, p. 194). Once students began to produce their videos, they engaged in other aspects identified by Haas as conceptual planning, including generating content and organizing ideas. In the present study, because the students engaged in planning in different media than their final product—some utilizing pen and paper to plan, and others using word processing—the organization of ideas, or arrangement, could not occur until some production had taken place. This shows the
connections between the phases of conceptualization and actualization, as well as their recursive nature.

The bottom oval of the diagram shows the phase of actualization. In this phase of work, the students worked to develop their videos in iMovie (Tyler and Morgan), Windows Movie Maker Live (Catherine, Elena, and Maryam), or Camtasia (Amanda). The acts and operations in this phase were more production oriented, aimed at bringing their conceptualizations to fruition. Because these acts and operations involved significant interaction with the video editing software, it is at this level that their familiarity or unfamiliarity with the tools of inscription—in this case the video editing software and other technologies needed prepare material for the videos—exerted the most influence.

The oval to the left and intersecting both phases represents the need to navigate technologies, suggesting that engagement with technological tools is a part of both phases of the students’ work. Although the students worked in the video editing software only while building their videos, they utilized other technologies including websites, library databases, word-processing programs, email, and social media during the conceptualization phase of their work, not to mention the often-ignored “low-tech” tools of inscription including whiteboards, markers, paper, pens and pencils, and post-it notes. Further, their knowledge or lack of knowledge of the affordances and limitations of the production software exerted influence over their decision-making as they conceptualized their projects.

The oval to the right of the diagram, also intersecting both conceptualization and actualization, represents acts of off-task behavior and procrastination, which occurred across both phases of the students’ work on their projects. Although it is easy to judge these
behaviors as detrimental to the students’ work on their videos, some scholars (Prior & Shipka, 2003) suggest that off-task activities are actually an important part of the writing process, and recent attention has turned to the importance of play in creative work such as composition. Further, for these students, examining when such activities occurred may offer insight into where students struggle while composing. While I was able to capture representations of Tyler’s seemingly off-task behavior, as well as representations of his multitasking (such as checking on his course registration for the next semester while working on a project for a current course), it is not possible to determine the functions of these behaviors from the data collected. As Prior and Shipka (2003) suggest, such activity may serve an important cognitive function. Alternatively, such activity may offer much needed “breathing space” when working on a complex task. Of course, off-task activity and procrastination become more problematic as deadlines loom near.

Figure 33 offers a representation in visual format of the processes that emerged from the data gathered in this study, and it offers one method for characterizing and thinking about the influences, acts, and operations involved in multimodal composing. It follows the theoretical work of Kress and van Leeuwen (2001) who argue that multimodal texts make meaning through four “articulations” (p. 4) which they term strata: discourse, design, production and distribution. Discourses “are socially constructed knowledges of (some aspect of reality)” (Kress & van Leeuwen, 2001, p. 4). They argue that discourses are realized in various semiotic modes. Designs realize discourses; design is the strata of conceptualization of content. Production is the “actual material articulation” (p. 6) of the content, while distribution is the means of sharing and transmitting the production. This
graphic offers detail, based on empirical evidence, of the specific actions and operations involved in the strata they term design and production. While Kress and van Leeuwen (2001) offer the theoretical foundation, this graphic illuminates how this theory plays out in praxis.

This graphic form of analysis of the students’ processes of composing as occurring in phases follows the work of other scholars who work in multimodal composition, new media, or digital composing, as well as much earlier work in process theory (Flower & Hayes, 1981; Selfe, Fleischer, & Wright, 2007). Selfe, Fleischer, and Wright’s (2007) “Words, audio, and video: Composing and the processes of production,” offers a recent example. In this book chapter, the authors present three separate diagrams, one focused on composing with words, a second on composing with sound, and a third on composing with video. Each of these diagrams describes the production processes for composing with each medium in a digital environment as occurring in three stages\(^\text{17}\). The stages include 1) putting the modal information into a digital format, 2) working with those modes in that format, and 3) sharing the products. These authors subsume invention into the first stage, including in each diagram considerations of purpose, audience, and form, planning, and locating the modal elements (including drafting text and finding or creating sound, image, and video as needed). The second stage involves arrangement and peer review, and the third stage involves delivery. The results of the present study further develop their diagram on composing with video in several ways. First, the information discussed here is based on experiential evidence from a student-focused study, while their diagrams are more general. Secondly, this model shows

\(^{17}\) Unfortunately, when these diagrams were reproduced in the published book, the typographical alignment was affected, and the quality of these diagrams, even in their published format, does not lend itself to reproduction here.
much more complexity in the phase of invention and offers a more fine-grained level of
detail about the specific acts and operations involved in composing a video, which helps us to
understand the complexities of multimodal composing on a much deeper level. By more
specifically addressing the influences on invention, this model highlights the complex
network involved in multimodal composing, including the influences of the tools of
inscription, which, as Haas (1996) notes, are often overlooked. Attention is devoted not only
to how students navigate those technologies, but also to how they make rhetorical decisions
that layer and weave various semiotic modes into a cohesive whole. Finally, it introduces the
issues of procrastination and off-task activities as aspects of the composing process that
deserve further attention.

It is important to remember that the processes shown in figure 33 occur within the
activity system represented in figure 31. Constraints, the community of practice, and the tools
that mediate composing are influences on invention and affect the conceptualization of a
project. Mediating tools also affect actualization. Just as any change in the activity system
affects the entire system, any change in the activity system may also affect the processes
students may engage in to reach their objectives and desired outcomes.

The next several sections of this chapter offer more in-depth interpretation and
analysis of the data in each phase of the students’ composing processes.

*Invention, Decision-Making, and Influences on Invention*

As evidenced by the categories emerging from each of the data types (observation,
interview, written reflection, and screen capture), invention is an important part of the
multimodal composing process, as it is for any act of composing. In the interviews and
written reflections, students devoted as much attention to describing their invention processes as they did their production work, which is somewhat surprising given that composing video was a new experience for them all and might encourage the students to focus more on production. Students spent a significant amount of time deciding on their topics for their videos, determining their thesis statements, and deciding how to develop their ideas. The data from this study support Brooke’s (2009) claim that “invention is not a practice that can be reduced to a handful of activities. Each of us draws our own set of practices from that larger repertoire, which includes other writers, particular sites and materials, texts, the various cultures we negotiate, and so forth” (p. 45).

In significant ways, the invention processes of these students in this project mirrored processes that are quite familiar in composition courses, despite the fact that they were engaging in invention for a multimodal product rather than an alphabetic text. Students began with an exigency, in this case, an assignment, and they engaged in brainstorming, discovering theses, outlining, and other acts of planning. They thought about the purpose of their videos, and they considered their own motives in producing these texts. Ideas were generated and developed through their engagement with sources, through conducting interviews, and through talking and collaborating with others. Students thought carefully about the expectations of their audiences in their plans for their videos. Their processes of invention developed through moments of discovery, as they understood and developed connections between the disparate elements and modes of their videos. Dewitt (2001) describes invention as a series of connections, writing:
I see invention as a layering of episodes, with each episode becoming what I will refer to as a ‘moment of invention.’ These moments occur when students notice something and when they see relationships and make connections. Furthermore, when students make connections between two or more moments of invention, they experience yet another, richer moment of invention as they create a mental text of sorts, that begins to pull together their fragmented experience. (p. 24).

The students’ processes of invention in this study provide evidence of this “layering of episodes.” Maryam’s work serves as one example. Based on her own life experiences, Maryam knew that she wanted to focus on immigrant students, but she did not have a particular claim in mind when she began to search for and read sources. As she read and considered the available source material, she began to see connections between what she was reading and her experiences, and a thesis began to take shape. Listening to music one day, she heard Phillip Phillips’ song, “Home,” a song she’d heard many times before, but in this particular hearing she recognized the relationship between the lyrics and her experiences, experiences that she had already connected to her sources. The song, in turn, became the inspiration for some of the visual elements of her video. It is possible to trace the early invention—the idea development phase—of each of the participants in this way.

Four threads emerged from the categories related to invention and the influences on invention that warrant closer attention: the students’ perceptions of the assignment requirements, the students’ consideration of modal possibilities, their feelings about the limitations of the tools of inscription, and the contrast in fluency observed between searching for print sources and searching for images.
Perceptions of the assignment requirements

As to be expected, no two students approached invention in exactly the same manner, and, it is possible that without the influence of the instructor’s assignment requirements and sequencing, there might have been even less similarity in the students’ invention practices, and more recursion. Because the instructor required the use of specific types of sources, most of the students (with the exception of Morgan) first turned to library resources and interviews to generate ideas and material for their videos. Although the students expressed some frustration with the need to synthesize their own experiences within their group with research published in scholarly sources, four of the six (Amanda, Catherine, Maryam, and Tyler) noted that the use of sources was vital to helping them “find” a thesis. Their description of “finding” a thesis in the intersection of intertextual influences and their own knowledge reflects Brooke’s (2009) suggestion that “the canon of invention frames the relationship between given and new information” (p. 44). All of the students were aware of the need to marry their own experiences with the information they found in sources, which was initially a concern for Morgan, who had a sense of the thesis she wanted to develop before consulting sources and wondered if she would find scholarly support for her ideas. Elena also had ideas about a potential thesis prior to reading any sources, and she found that the sources supported her experiences well, but others in her group disagreed with the scholarly information. Each of them had to determine how to integrate the source material with their own knowledge, and the knowledge of others in their social group whom they interviewed.

The students were all required to develop a storyboard for their project, but only Maryam and Catherine believed this activity was useful in the development of their video,
and Maryam saw its usefulness only after she began assembling her video, referring to the assignment as “a task” earlier in the process. Storyboarding is a staple in video production, and can be a very useful resource (Katz, 1991). However, the students said that because they were unfamiliar with the software and the capabilities of the software, they were unable to use the storyboards to their full effect. Indeed, the storyboards were due only one class meeting after the students were introduced to iMovie by the Emerging Technologies librarian, and the students using Movie Maker Live had no formal exposure to that program. It is possible that a lack of familiarity with the technology influenced the students’ beliefs about the usefulness of the organizer. Additionally, the act of storyboarding itself was unfamiliar to the students, and while they practiced with two in-class activities prior to generating their own storyboards, analyzing a professional example as a model, and discussing how that example was then translated into video might have been a useful exercise.

The time limit placed on the video was an assignment constraint that the students universally opposed, particularly when they perceived that the time limit conflicted with the content requirements. Every “how-to” guide published for instructors considering multimodal projects urges the instructor to “start small” and to be mindful of the memory-intensive nature of audio and visual files (e.g. Takayoshi & Selfe, 2007), and the instructor had this in mind when she restricted the video length. Further, she was working with an assignment with similar length restrictions that other instructors in the first-year writing program had used with success. However, the students believed that the video length was too restrictive and that it overly limited their ability to develop their ideas. The students largely
saw this project as more “creative” and more “freeing” than writing essays, but there was clearly a tension between this sense of freedom, the perceived creativity of the assignment, and the time limitation. It is possible that students’ strong reaction to any limits on the assignment is due to the more personal nature of the topic, which created friction between the students’ sense of ownership over what they saw as their own stories and the restrictions or limitations on how they could relate those stories. In her interview, Catherine commented “I was glad [the instructor] didn’t give us too many restrictions, because it was a part of ourselves. And if she gives us restrictions on how to represent a part of ourselves, then it’s really not a part of ourselves anymore.”

Assignment requirements and instructor influence over the assignment sequence were factors that the students viewed negatively in the process of composing their videos. The tension students felt between their desired goals and the assignment constraints could result from the students’ multiple positioning as both members of their social group (one activity system) and as first-year writing students in a particular course within a specific program (another activity system), evidence of the contradictions that arise between activity systems (Engestrom, 1987) and also an example of the notion of lamination (Prior & Shipka, 2003). In “Composing Multimodal Assignments,” Hess (2007) encourages instructors to “avoid adding too many constraints” (p. 29) when developing multimodal assignments to allow the students to develop their own perspectives. Of course, the need to meet student outcomes for the course, and the desire that the work meet the requirements in this “writing in the disciplines” program, meant that some requirements were necessary. There will always be parameters and limitations on any composing situation, unless the nature of the work is entirely creative. In
her discussion of her work to develop a multimedia website for the U.S. Forest Service Research Lab, Jennifer Sheppard (2009) discusses the complex negotiations that took place between her and her client, who provided the exigency and established the initial parameters for her work when they hired her for the job. Learning to craft a message within established parameters is a useful rhetorical skill for students to learn.

Consideration of modal possibilities

Research question 1a establishes that one focus for this study is to investigate how students make rhetorical decisions as they compose multimodally. The data reveal that the students studied in this project were acutely aware of the need to develop a unified message through the multiple modalities of their videos. These students were very conscious of the need for all of the material in their videos to be “relevant,” which they defined as clearly connected to their purposes and their theses.

Further, they were sensitive to the need to make choices that were appropriate for the medium of delivery, and for the expectations of their audience given the medium of delivery. They recognized that this video could not simply be a voiceover recording of an essay. Maryam’s comment “you have to show it through pictures” captured the understanding of the students that the visual aspects were important and not merely “add-ons.” The students also understood that because they were creating videos, they needed to strike a balance between providing information and entertaining. Morgan noted “I wanted it to be interesting to watch versus just informational.”

The inventive “connections” and “relationships” discussed by Dewitt (2001) and evidenced in the students’ work give rise to coherence. Yancey (2004a) explains “coherence
in digital compositions seems to be a function of a pattern that is created through the relationships between and among context, screen, image, the visual, [and] the aural” (p. 95). She goes on to say that digital compositions “weave words and context and images” in an “ordered complexity” based on relationships and patterns within and between the elements (p. 95). Such “weaving” and “ordered complexity” is seen in the students’ concern with “relevance” as they made decisions regarding what to include or how to arrange their videos. In their discussions of how they made decisions about visuals, or sound, or color, or text for their videos, students seemed to understand that there must be a clear relationship between their theses, the images they selected, the context and purpose of their projects, the source information they chose to incorporate into their videos, and audience expectations. Students made purposeful choices about what they included, or did not include, in their videos, and generally they could articulate why they made those choices.

Certainly the students’ rhetorical awareness indicates past instruction, but I would also argue that some sense of their awareness regarding video as a medium has been learned through their increased past experience as consumers of this medium. Prior to the inception of the students’ work on their own videos, they viewed sample video stories and mini-documentaries as a means to discuss video composition. With no prompting and no observed prior instruction, the students made very insightful comments regarding the use of color, sound, lighting, camera angles, and focus in the videos they viewed. Although they often lacked the vocabulary to accurately describe shot composition or various techniques and effects, they clearly understood that particular choices were made for certain effects, and they were able to discuss these choices with some acumen. This may, in part, explain the reaction
of some of the students, Catherine, for example, who were disappointed with their own videos. While they understood the effects that resulted from various choices, they lacked the expertise, the time, or the tools to enact this knowledge in their own videos. Further, this might suggest that beginning with a medium more familiar to students, such as video, might be a productive place to begin instruction with students who have difficulty understanding rhetorical concepts in alphabetic, academic texts, rather than utilizing multimodality near the end of a course. Given their lifetimes of exposure to video, students seemed to understand the importance of audience, purposeful arrangement, coherence, and motive in video more than I have observed with students working with alphabetic text, and they were able to transfer this understanding across the various modalities of their videos.

**Limitations of the Tools of Inscription**

Three of the participants, Catherine, Maryam, and Elena, all perceived that their videos were hampered because of the video-editing program they were using, Movie Maker Live. This perception may stem from their exposure and training in iMovie in class, and their lack of similar exposure and training with Movie Maker. Students working in iMovie (Morgan and Tyler) did not have frustration-free experiences working with the technology; however, they did not believe that their videos were in any way hindered by the frustrations they encountered. In fact, both Morgan and Tyler stated that the software was relatively “easy” to use once they had a little hands-on experience with it. When the students’ perceptions are taken together, it becomes clear that some instruction in the technology is a must, even if it is a one-time, introductory workshop, as was the case with the iMovie workshop. The exposure to a program—or lack of exposure to a program—through such
instruction seemed to shape the students’ attitudes towards the technology they were using to develop their videos. The fact that the students using Movie Maker felt they could not fully realize their visions for their videos because they lacked technological knowledge shows that they need basic technology instruction as much as they need rhetorical instruction for a project of this nature. This may also be true for media that we assume are more familiar to students, such as word-processing programs, which suggests that we need to pay attention to technology in all contexts.

An instructor’s own lack of technology knowledge, or perceived lack of knowledge is cited by Takayoshi and Selfe (2007) as one reason instructors resist incorporating multimodal assignments into their syllabi. It is important for instructors to remember that their writing classes do not take place in a vacuum. Their classes occur in a network. Support can be drawn from various agents within the system. Emerging Technologies librarians, other faculty with technological expertise, and other students who are comfortable with technology can all provide assistance. Additionally, as the participants in this study reported, the Internet offers a wealth of “how to” information that can be accessed to address technological questions. It is important that the students learn about the various avenues of support that are available to them, rather than rely solely on the instructor as the source of all knowledge related to the completion of assignments for the course.

Fluency in searching for images as compared to searching for sources

One final item merits attention in the invention phase of composing, and that is the comparison of the students’ fluency in searching for images as compared to searching for sources. The best evidence of a contrast in fluency comes from Tyler’s screen captures.
Although Tyler struggled with locating scholarly sources appropriate for his video and had difficulty developing key words that would return fruitful search results, his ability to search for images was much more fluent. He had a more specific notion of what he was looking for when he began an image search, and was able to search with key words that were more successful in returning useful results. In searching for images, Tyler relied on his own knowledge of his social group and the images that had significance for his social group. He was also mindful of images that would relay meaning to audience members potentially outside of his group. His prior knowledge of his social group helped him to conduct more confident searches. In contrast, in searching for text sources, Tyler had to move outside of his own experience, searching in sports psychology as well as sociology. As an outsider in either discipline, Tyler had to expend more effort to conduct effective searches, in part because he was unfamiliar with the key terms within those disciplines that would facilitate success, but also because of uncertainty of where to search. Tyler’s clear preference for Google worked to his advantage in searching for images, but hindered his ability to search for text sources, particularly scholarly sources.

One additional aspect stands out when contrasting Tyler’s searches. As Kress (2010) notes, images are meant to be taken in all at once, as cohesive wholes. A composer, therefore, can know instantly if an image meets his or her needs. Text, on the other hand, must be read linearly, and cannot be absorbed instantly. Thus, when searching for textual sources, there can be many false starts when sources are located that look, at first glance, to be useful, but prove upon closer examination to be less than useful. More time must be
expended to discern if a textual source will be beneficial to a developing argument, and therefore the process of searching for textual sources can be more halting.

*Acts and Operations of Production*

Invention is an early stage of the production process, and one that is returned to, in a recursive manner, throughout production. At some point, however, a text must begin to develop. As Dewitt (2001) argues, invention is disorderly and complex but at some point, it gives way to shape. A text begins to emerge from the chaos. For the students in this study, the moment of textual emergence began when they started to assemble the various components of their videos within the video editing software. When composing alphabetic text we have tended to think of production in terms of drafting, revising, and editing, but when composing multimodally we might think of production in terms of assembling, arranging, and coordinating, as well as editing. Of course, this might offer a fresh picture of the processes utilized to compose verbal text, as well. The act of assembling involved many different operations and tools, and might, therefore, be described as an ecology in its own right. Figure 32 is a diagram of the processes students engaged in to assemble the various semiotic modes of their videos. This diagram does not include the sources of help students turned to when they experienced difficulty.
In this diagram, circles represent actions, while small squares or rectangles represent tools utilized to complete those actions. Each of these acts required numerous operations, defined by Geisler and Slattery (2007) as “readily identifiable and usually repeated tasks” (p. 194) such as locating a saved photograph and using the “drag and drop” feature to move that photograph into iMovie. To borrow Elena’s jigsaw metaphor, which is actually quite an apt description for what I observed in Tyler’s screen capture, the process of assembling the elements of the video was very much like gathering the pieces of a complex puzzle, and getting them all in the same space so that they could be arranged to form a cohesive whole through the processes of arranging and coordinating.

Students experienced a few difficulties with assembling the various components of their videos, including Maryam’s difficulty figuring out how to record voiceover in Movie
Maker, and Catherine’s codec compatibility issue with the interview footage she recorded on her cell phone. Despite these challenges, this was probably the most familiar part of the process because, as one participant described it, the operations involved were similar to uploading material to Facebook or another social media site, and those were comfortable and familiar operations.

The arrangement and coordination of the various elements, on the other hand, was a challenge. The students did not anticipate the difficulty they would have aligning the audio tracks with the visual components, and they were initially unsure of how to effectively blend the scholarly source material, the interview information, and their own personal experiences. The action of arranging and coordinating is not so very different from what must be done in writing an alphabetic text. The writer must decide on the order in which to present his or her argument, and where to infuse intertextual information. The distinction here, of course, is that the students were arranging textual elements of different semiotic modalities, which allowed for the layering of sound on image, sound on video, text on image, and so forth. The operations are less familiar. Once again, their decisions reflect the “weaving” and the patterns described by Yancey (2004a). The students wanted the disparate modalities to blend together in a cohesive whole, meaning that the timing between the audio and the images needed to be right, the transitions into and out of the interviews needed to be smooth, and the scholarly information needed to be blended effectively with the personal. While the operations of arranging and coordinating the various elements—moving elements around, changing the timing of elements, manipulating the visual effects, and adding transitions—
were not difficult, making changes was complex. The elements of the video were so interconnected that a change with one element could affect everything else in the video.

While each action within the actualization of the videos is significant, two aspects of the work of production deserve closer scrutiny: the students’ navigation of the tools of inscription (the technologies), and their off-task behavior and procrastination.

*Navigating the tools of inscription*

Research question 1b established that a second focus for this study was to develop an understanding of how students navigate the use of unfamiliar technologies as they compose multimodally. The characterizations of today’s students as “the Net Generation” (Tapscott, 2009), as “Digital Natives” (Prensky, 2010), or as “Born Digital” (Palfrey & Gasser, 2008) assume high levels of technology use and skill among those born since the advent of digital technologies. However, instructors learn at the start of each semester that universal knowledge of how to use digital tools effectively is not always the case, as we assist uneasy students with a variety of skills from saving files to conducting online research. Students may, in fact, have technological experience, but that experience may not align with the expectations for technology use in a specific academic environment. When we ask that students compose multimodally, we potentially introduce even less familiar technologies into the composing process. It is important to understand how students navigate such work.

The participants in this study proved themselves to be resourceful in learning to use iMovie, Movie Maker, and Camtasia to produce their videos. The most common methods for learning included trial and error and utilizing online resources available through YouTube or a Google search. All of the students reported using both of these means for “figuring out”
how to use the technologies. Several students also sought help from others, including friends and, in Amanda’s case, the librarians.

When students have a technology question or run into a problem, they expect a quick answer. Amanda reflected on the frustration she experienced when she emailed one of the librarians through the “Get Help” link on the library’s website, and received an automated response that someone would answer her question within 24 hours. Amanda perceived her need to be more immediate than a possible 24-hour wait suggested, and due to her procrastination, she was right. Instead of waiting for the library’s response, she turned to Google and was able to find her answer. When working with unfamiliar technologies, it is important that immediate assistance is available, because students cannot always anticipate their questions or the problems they will need to troubleshoot in advance. Because they tend to underestimate the amount of time a task will take and they procrastinate, their needs end up being urgent.

The desire for immediate feedback is also evidenced in the different methods of interaction in which the students chose to engage. Their interaction with one another was always facilitated through a synchronous method of communication. Tyler engaged in Facebook chats with Morgan, Maryam, and Amanda during the work time in the Learning Commons. Even though the other students were in the same physical space, Facebook chat allowed Tyler to communicate with three other students both simultaneously and instantaneously. If he moved about the Learning Commons to talk with each of the others, it would have taken more time. Not only would he have needed to locate each one, it is unlikely that he would have found them all in exactly the same space. While brainstorming
for her project, Morgan chose to text with two others in her social group. Texting also facilitated simultaneous and instant communication. In a matter of seconds, Morgan and her two friends generated 63 text messages that helped Morgan develop a comprehensive list of the various cliques in her high school. Such interaction would have taken much longer and would have been much more cumbersome if facilitated through asynchronous email. However, when the students interacted with the instructor or the librarians, this communication was facilitated through email. The students reported that they generally received a response from their instructor relatively quickly, but they did not receive as timely feedback from others. As evidenced previously, this can be a frustration for the students who have grown accustomed to instant, always-on communication.

Results of this study suggest that although some basic instruction in the software programs is needed, once students understand the basic functions of a program, they are able to problem-solve and learn to use the programs through trial and error, assuming that support systems such as YouTube videos, Vimeo videos, and Google search are available. Once again, it is important that students learn to utilize all available means of support as they compose.

A final issue of interest related to students’ navigation of the technologies involves their self-awareness of their own capabilities with technology. As noted in chapter two, several of the students indicated in the background survey that they had prior experience composing a video. However, during the interviews at the end of the project none of the students claimed previous experience. This may suggest a misunderstanding of what constitutes functional literacy (Selber, 2004) with various technologies, or it may suggest an
initial misinterpretation of what it means to “create” or to “compose” a multimodal video. In his interview, Tyler explained that he had opened iMovie and uploaded video footage prior to ENG 101, but he had never actually composed a video. In his survey, he responded that he had created a video based only on the experience of opening digitally recorded video within the program, although clearly this is not an act of creation or composition. After working through the conceptualization and actualization of his digital autoethnography, Tyler understood clearly that he had never engaged in a similar act of composing, and that he did not have a solid understanding of iMovie prior to this experience. As a result, he became more self-aware in terms of his own technological knowledge.

Off-Task Activity and Procrastination

In Tyler’s screen capture recordings, I observed varied levels of behavior that would be identified as “off-task,” or seemingly unrelated to the work on his digital autoethnography. Additionally, in their interviews and written reflections, several students discussed the impact of procrastination on their projects. While it would be easy to dismiss these behaviors as insignificant to or disruptive of the students’ processes, I am not convinced that this is the case. Instead, I interpret these behaviors as serving a function within the student processes.

Off-Task Activity

In examining off-task activity in Tyler’s screen captures, an interesting pattern emerged that deserves further attention. As noted in Chapter 4, Tyler’s off-task activity seemed to cluster early in the work on his project, when his project was still in the conceptual phase, or on the day before a holiday (Thanksgiving). Further, two of the screen captures
evidencing high levels of off-task activity were recorded when students were working in the Learning Commons. There are two ways to interpret this data. First, working in an area such as the Learning Commons might make it more difficult to focus, and two of the four “high time off-task” work sessions occurred in the Learning Commons. However, Tyler was not in the Learning Commons on November 13th, nor was he in the Learning Commons on November 21st, the day before Thanksgiving, the other two work sessions with significant off-task activity. There must, therefore, be another explanation. Through careful analysis of Tyler’s screen capture, I would argue that the work sessions in which Tyler was experiencing the most frustration or lack of direction with his project were the work sessions in which he exhibited the highest levels of off-task behavior.

On November 6th and November 8th, students were just getting started working on their projects in earnest. Their storyboards were due on the 1st of November, and Tyler made little progress in working on his video between the storyboard deadline and the first night of work in the Learning Commons. When he began his screen capture on November 6th, he has only a few lines of text written in his script, and no work completed on the video itself. At this point, he has not yet found the focus for his project. While he spent a bit of time on a website reading about Pheidippides, a runner in ancient Greece, and searching for an image that he might use to represent Pheidippides, it is clear from his work that he was unsure what he needed to do to get started on his project. He had not yet had his conference with the instructor, and therefore had not yet had the discussion with her regarding his overly literal interpretation of the assignment. (Initially, he planned to focus on runners who preferred to run in a group as opposed to runners who preferred to run alone.) His work, therefore, lacked
direction, and he was easily distracted by a podcast that he had downloaded from the website RoosterTeeth.com into iTunes. Even when he was technically “on-task” during this work session, he bounced from action to action with no sense of purpose, chatting with classmates on Facebook about the project, looking for images, learning to manipulate the Ken Burns effect in iMovie, and sporadically reading about Pheidippides.

On November 8th, students were once again in the Learning Commons. Tyler had his conference with the instructor on November 8th, and had refocused his project by this point to serious runners as his group, which he planned to contrast with casual runners. At the start of the work session, Tyler was working on his script in Microsoft Word. However, his drafting was in “fits and starts.” He seemed to be struggling to decide what to include in his script, and what he did draft into the script was mostly in the form of phrases and reminders to himself. He also spent a bit of time during this work session searching for sources, but had difficulty coming up with search terms that returned the results he was hoping for. When he did find a potential source, an e-book from the university library (and not one that made its way into the final video), his engagement with this book seemed more like “grazing” than even skimming. He appeared to read a few words from one section, then scrolled quickly to another section and did the same. Much like on the 6th, he seemed not yet focused on the direction of his project, and was easily distracted by cutscenes\textsuperscript{18} from the video game Halo that he was watching on YouTube. It was in this work session that Tyler had the most instances of off-task behavior, with 15 occurrences.

\textsuperscript{18} A “cutscene” is a sequence from a video game that involves no player interaction. Generally, cutscenes offer the storyline and advance the plot of the game. Cutscenes often appear between levels of game play.
In the second work session on November 21st, Tyler was working with a second e-book from the university library, one that was actually used as a source in his video. He was also working with a website describing the “runner’s high,” and he was adding material from both of these sources into his script. At this point, he had made some progress on his script as well as on adding visual material to his video. For the first 11 minutes of this 49-minute recording, Tyler worked without distraction. Beginning at roughly the 11-minute mark, Tyler once again began to be distracted by cutscenes from Halo. After this initial distraction, Tyler had the Halo footage on YouTube playing in the background while he was attempting to read the source material in the e-book and on the website and incorporate the material into his script. As the work session progressed, he became increasingly drawn to the video from Halo and away from his own work, perhaps because he appeared to be having some difficulty finding the material he wanted in the sources that he was working with. My inference, therefore, is that off-task behavior serves as a welcome diversion when the work of composing is not going smoothly.

In “Chronotopic lamination: Tracing the contours of literate activity,” Prior and Shipka (2003) share the writing process of a PhD in Psychology, who purposefully does the laundry while she is revising a piece for publication. Each time the buzzer on the dryer sounds, she gets up from her writing work to fold the dry clothes and place clothes from the washer into the dryer. She suggests that these pauses in her writing activity offer her “think” time, and allow her to decompress and remember things that she wanted to do with the piece. It is suggested, then, that periods of downtime involving activities unrelated to the work of composing, rather than being mere distractions, may, in fact, be productive in the composing
process. Unlike the downtime described by Prior and Shipka (2003), which was consciously planned by the writer, Tyler experiences unplanned downtime and interruptions of his work. In his case, it seemed that once he had a clear focus and direction for his project, there was much less off-task activity, which may indicate that he needed fewer breaks and could maintain more sustained focus on his work.

Procrastination

In their interviews and written reflection, three students emphasized that they procrastinated in the work with their videos. Those students were Catherine, Amanda, and Elena. There seems to be an interesting correlation between procrastination and the students’ relationship with technology. Morgan and Tyler, who reported little technological difficulty and certainly no apprehension about working with technology also reported no procrastination. (Morgan mentioned that she put off looking for scholarly sources, but she was working to build her video and therefore was not procrastinating, and Tyler’s screen captures evidence fairly regular work on his video.) However, Catherine and Amanda both expressed that they did not feel comfortable working with technology, while Elena was a bit of a conundrum.

In her interview, Catherine described herself by saying “I’m not very tech . . . like I do not know anything about technology,” and on her background information survey, she indicated she “preferred projects that do not require much use of technology beyond word processing.” She also indicated that she was “nervous” about the project. Catherine’s entire demeanor towards the technology, and the issues she experienced with it, was decidedly
negative throughout the project, although I would not describe her as an otherwise negative person.

In class observation, I observed a conversation between Amanda, Tyler, and another student. The student asked Tyler whether it was possible to take video from YouTube and incorporate it into the digital autoethnography, and Tyler answered that it was. Amanda responded, “I couldn’t do that. I am not so technologically knowledgeable.” I had shown the students the basic operations of Camtasia, and Amanda decided that she would use that program to complete her video. She also indicated on her survey that she preferred little use of technology in her classes, and she indicated that she was both nervous and excited about the digital autoethnography project.

Early on, Elena expressed technological confidence; she indicated on her background survey that she had “created a video using a computer-based application such as iMovie, Movie Maker, Adobe Premiere, Sony Creative, Nero 10, or Final Cut,” and self-reported that she was “somewhat comfortable” with those applications. When I distributed the Camtasia software and offered to explain the basic operations of the program, Elena expressed that she “already knew” how it worked. However, once the work on the video began, she admitted feeling “vastly overwhelmed,” and identified navigating the technology as the most frustrating and challenging part of the project. Elena reported experiencing the most difficulty with the technology—a computer crash that, according to her, meant she had to reconstruct her video.

For Catherine and Amanda, who voiced anxiety about the technology going into the project, procrastination seemed almost like a coping strategy. If they did not begin the
project, they did not have to face the challenge of working with the technology. They anticipated difficulty, and rather than face it, they put it off. For both of them, this only led to more frustration. Catherine expressed “I was just like…I was so frustrated with the Movie Maker, like I just started crying. I was just like, I’m not going to be able to do this, and I’m not going to get it done in time and it’s going to stink.” Although she was more calm, Amanda, too, indicated frustration. She explained that using the software “was very difficult…it was just really frustrating.”

For Elena, procrastination seemed to be a response to the surprise that this project was not going to be simple, as well as a way to avoid the pressure she felt over her grade. This may indicate unvoiced anxiety. In her reflection, she wrote “At first, I thought this video was going to be all too easy, but I slowly realized that making the video was going to be a lot harder than I had perceived.” In her interview, Elena shared with me that her course grade was borderline, and that the instructor had informed her that this project could determine whether or not she would successfully complete the class.

**Answering Instructor Concerns**

In “Thinking About Multimodality,” Takayoshi and Selfe (2007) list five questions frequently asked by instructors who are considering the inclusion of multimodal assignments into their curricula. Two of these questions are answered through the results of this study.

“*When I teach multimodal composing, am I really teaching composition?*”

Many first-year composition programs in the United States follow the *Writing Program Administration Outcomes Statement*, adopted by the Council of Writing Program Administrators in April 2000 and amended in July 2008, as the foundation for their
programmatic curricula. This outcomes statement specifies outcomes in five areas: rhetorical knowledge; critical thinking, reading, and writing; processes; knowledge of conventions; and composing in electronic environments. The results of this study indicate that multimodal composing can and does address outcomes in all five of these areas. Table 7 lists the outcomes adopted by the CWPA.
Table 7. WPA Outcomes for First-Year Composition (Council of Writing Program Administrators, 2008)

<table>
<thead>
<tr>
<th>Rhetorical Knowledge</th>
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<tbody>
<tr>
<td>• Focus on a purpose</td>
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<tr>
<td>• Respond to the needs of different audiences</td>
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<tr>
<td>• Respond appropriately to the different kinds of rhetorical situations</td>
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<tr>
<td>• Use conventions of format and structure appropriate to the rhetorical situation</td>
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<tr>
<td>• Adopt appropriate voice, tone, and level of formality</td>
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<td>• Understand how genres shape reading and writing</td>
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<tr>
<th>Critical Thinking, Reading, and Writing</th>
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<tr>
<td>• Use writing and reading for inquiry, learning, thinking, and communicating</td>
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<tr>
<td>• Understand a writing assignment as a series of tasks, including finding, evaluating,</td>
</tr>
<tr>
<td>analyzing, and synthesizing appropriate primary and secondary sources</td>
</tr>
<tr>
<td>• Integrate their own ideas with those of others</td>
</tr>
<tr>
<td>• Understand the relationships among language, knowledge, and power</td>
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<tr>
<th>Processes</th>
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<tr>
<td>• Be aware that it usually takes multiple drafts to create and complete a successful</td>
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<tr>
<td>text</td>
</tr>
<tr>
<td>• Develop flexible strategies for generating, revising, editing, and proof-reading</td>
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<tr>
<td>• Understand writing as an open process that permits writers to use later invention</td>
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<tr>
<td>and re-thinking to revise their work</td>
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<tr>
<td>• Understand the collaborative and social aspects of writing processes</td>
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<tr>
<td>• Learn to critique their own and others' works</td>
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<tr>
<td>• Learn to balance the advantages of relying on others with the responsibility of</td>
</tr>
<tr>
<td>doing their part</td>
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<tr>
<td>• Use a variety of technologies to address a range of audiences</td>
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<tr>
<th>Knowledge of Conventions</th>
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<tr>
<td>• Learn common formats for different kinds of texts</td>
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<tr>
<td>• Develop knowledge of genre conventions ranging from structure and paragraphing</td>
</tr>
<tr>
<td>to tone and mechanics</td>
</tr>
<tr>
<td>• Practice appropriate means of documenting their work</td>
</tr>
<tr>
<td>• Control such surface features as syntax, grammar, punctuation, and spelling.</td>
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<tr>
<th>Composing in Electronic Environments</th>
</tr>
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<tbody>
<tr>
<td>• Use electronic environments for drafting, reviewing, revising, editing, and sharing</td>
</tr>
<tr>
<td>texts</td>
</tr>
<tr>
<td>• Locate, evaluate, organize, and use research material collected from electronic</td>
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<tr>
<td>sources, including scholarly library databases; other official databases (e.g.,</td>
</tr>
<tr>
<td>federal government databases); and informal electronic networks and internet</td>
</tr>
<tr>
<td>sources</td>
</tr>
<tr>
<td>• Understand and exploit the differences in the rhetorical strategies and in the</td>
</tr>
<tr>
<td>affordances available for both print and electronic composing processes and texts</td>
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In terms of rhetorical knowledge, evidence from this study shows that as they composed their digital autoethnographies, students did focus on a purpose, and they were
very in tune to the needs of different audiences. Further, they understood how the medium of video and the genre of autoethnography meant that their compositions would be different from the other projects (alphabetic essays) they had completed so far in ENG 101. In terms of critical thinking, reading, and writing, students used their compositions to communicate with an audience after completing a series of tasks to complete the assignment. Their discussions of working with sources and interview material, and blending that material with their own ideas evidences that they did “integrate their own ideas with those of others.”

In terms of processes, this study evidences that work in multimodal composing can address each of the seven outcomes. As they developed their videos, students created multiple drafts. After initially assembling their videos (a stage, in itself, that was completed in multiple drafts), they worked through various arrangements until they achieved their desired products. Elena’s remark “I just shifted things around until they worked for me” is representative of the sort of revising that students did as they worked on their videos. Their processes were recursive, and they continued to engage in invention even as they produced their videos. Sharing their ideas, their videos in progress and asking others for help and suggestions indicates their understanding that composing is “collaborative” and “social.” Further, the fact that they needed to learn to use the technology through trial and error and by seeking answers to problems they encountered addresses the need to “balance the advantages of relying on others with the responsibility of doing their part.”

The outcomes categorized as “Knowledge of Conventions” are potentially the most problematic for multimodal assignments, as rules and guidelines are both context and genre specific. Any composition program may emphasize or privilege different conventions.
Further, in innovative work such as multimodal videos, there may be no established “common formats.” Conventions in such texts are dynamic, evolving and changing, making the definition of “convention” more difficult. Even so, in the work on their videos, students did strive to meet conventions appropriate for the medium, including transitioning smoothly between visual elements and providing unity between the visual elements and the voiceover, as well as the genre of ethnography, blending the interview and scholarly source material effectively. Further, although they struggled to understand how to document their sources in their videos, they did make valiant efforts, some more successfully than others. Developing an awareness the evolving nature of conventions in multimodal text is important, and grappling with the challenges of developing guidelines for some types of texts is equally as important as learning the common conventions for more established types of texts. The “Framework for Success in Postsecondary Writing” (Council of Writing Program Administrators, National Council of Teachers of English, & National Writing Project, 2011) states that “as multimodal texts become more prevalent, teachers will […] need to attend to the evolving conventions of these new forms, developing appropriate conventions with new students and colleagues” (p. 9). This same document asserts that “the ability to understand, analyze, and make decisions about using conventions appropriate for the purpose, audience, and genre is important in writing” (p. 9). Participants in this study engaged in the skills of analysis and decision-making as they determined the conventions appropriate for their videos.
“If I teach multimodal composition will the focus on technology detract in significant ways from a focus on rhetorically-based composition instruction?”

The results of this study indicate that teaching multimodal composition supports rather than detracts from a focus on rhetorically-based composition instruction. I observed many class discussions in which students explored how to develop their ideas using all of the available means afforded by the medium of video. Students did not view the images they added in to their videos merely as decoration or entertainment for the eyes, instead, they considered how each image added to or complicated their spoken text. They thought about their inclusion of music in terms of whether or not a musical selection contributed to the development of their ideas. They made purposeful choices about who to interview, and about what segments of the interviews to show in their videos. The students were making rhetorically-based decisions, particularly when medium is considered an integral component of the rhetorical situation. Discussing literary texts, McGann (1994) explains that in some print texts, “the physique of the document has been forced to play an aesthetic function, has been made part of the literary work. That is to say […] the distinction between physical medium and conceptual message breaks down” (p. 77). Hayles (2002) argues that the materiality of a digital literary text contributes significantly to its meaning. She states “focusing on materiality allows us to see the dynamic interactivity through which literary work mobilizes its physical embodiment in conjunction with its verbal signifiers to construct meanings” (p. 130-131). Drawing on Hayles, Wysocki (2004b) argues that materiality contributes to meaning in all manner of texts; this is not limited to “literary or aesthetic texts” (p. 7).
As Takayoshi and Selfe (2007) express, in today’s world communication increasingly occurs through multimodal texts, and we must “provide students an introductory, rhetorically focused introduction to a wider range of semiotic resources” (p. 8) in our classes. Teaching students to navigate the use of different communication technologies is an important part of effective rhetorical instruction. The “Framework for Success in Postsecondary Writing” (Council of Writing Program Administrators et al., 2011) states

Rhetorical knowledge is the ability to analyze and act on understandings of audience, purposes, and contexts in creating and comprehending texts. Rhetorical knowledge is the basis of good writing. By developing rhetorical knowledge, writers can adapt to different purposes, audiences, and contexts. Study of and practice with basic rhetorical concepts such as purpose, audience, context, and conventions are important as writers learn to compose a variety of texts for different disciplines and purposes. (p. 6)

In the twenty-first century, it is not sufficient to address rhetorical knowledge only in terms of alphabetic essays. In the twenty-first, century, “a variety of texts” must include composing in digital environments, composing that is often multimodal. As the WIDE Research Collective (WIDE, 2005) argues, “writing isn’t just scripting text anymore. Writing requires carefully and critically analyzing and selecting among multiple media elements.” It involves arranging those media elements meaningfully. It is the development of relationships among text, image, sound, color, and movement to create meaning. It is a complex process of orchestration and composition, a process in which the development of meaning is contextualized within the technologies that are used to produce the compositions.
in a way very different from the use of a word processing program to produce alphabetic text. Rhetorical instruction is needed to teach students to do this well. Effective rhetorical instruction in the twenty-first century must acknowledge the wide variety of technologies for composing.

One Elephant in the Room: Evaluating Effectiveness

No discussion of multimodal composing and effective rhetorical instruction should ignore the issues of evaluating multimodal compositions and the connections between students’ composing processes and the effectiveness of their resultant products. In the present study, I focused entirely on what the students did, and on how they made the rhetorical choices they made throughout their work, in order to describe their actual, current processes, not to evaluate their processes or their products. The students’ digital autoethnographies were completed within the context of a first-year writing course that involved instruction in rhetoric, and the students’ choices were made within the context of this instruction. As is true for all composition courses, some of the students made more effective choices and ended up with stronger digital autoethnographies than others. Tyler’s thesis statement, a thesis statement in need of revision, serves as an example of the fact that students’ choices are not always as successful as we might hope.

Emig (1971) argued that “most of the criteria by which students’ school-sponsored writing is evaluated concerns the accidents rather than the essences” (p. 93). While we have, hopefully, made progress in our methods of evaluation in the forty-plus years since Emig’s publication, we need to remain mindful of her argument, as well as Shaughnessy’s (1977) discussion of “derailments”—the notion that when confronted with unfamiliar composing
situations, students are more likely to make mistakes they would not otherwise make, mistakes not related to learner competence—when we consider the evaluation of multimodal composition. Wysocki (2004b) suggests that “we can acknowledge that new and/or unfamiliar objects always require familiarization and time for learning” (p.22), and she advocates for strategies of “generous reading” (p.22) “that include but also help us look beyond the naturalized rules and guidelines for how we present ourselves in print” (p.22). As we evaluate students’ multimodal work, we need to remind ourselves that they are novices, novices making choices that are being “tried out and on” (Wysocki, 2004b). With this awareness, we might consider where student choices go astray, and determine where we might intervene with instruction that helps students develop the skills and strategies that they need to make more effective choices.

Limitations and Potential Directions for Future Research

While this study offers insight into the multimodal composing processes of students, it is limited in several ways. This study was designed with a naturalistic case study approach; it is intended to provide detailed description of the writing processes of a single group of students working on a specific project at a given time, and the results are not meant to be generalizable. Given the small scope of this study, more research is needed to determine whether the categories of influences, actions, and operations that emerged from this study might apply to other multimodal composing situations in other contexts. Specific limitations related to the setting, participants, and methods of data collection, as well as possibilities to address those limitations in future research are outlined below.
This study was conducted within one first-year writing program at a single, research one university with a well-qualified, relatively homogeneous student body. Further, this study focused on a small number of participants. The participants in this study entered the university with strong academic profiles, and the instructor indicated to me that this particular class was her “strongest” section in that semester. Participant characteristics and dynamics may have influenced the results of this study. Therefore, one interesting direction for further research would be to observe the same assignment with a very different student population. It would be beneficial to learn how the composing processes of a more diverse group of students would compare. For example, would another group of students stick with a project that required as much trial and error to learn to use a technology? Would a different group of students consider their rhetorical choices with the same depth of the students in this study?

Additionally, his study traced the processes of the participants as they worked on a single, instructor-designed project. Because the project was a class assignment with pre-defined requirements, some of the actions and activities that were enacted by the students reflect the influence of the course instructor, the assignment parameters, and the course design. Given that the assignment itself was such a significant variable in the students’ perceptions of this project, one avenue for further research would be to replicate this study in a future section of this instructor’s class. Repeating the study within classes taught by the same instructor would allow the researcher to observe the impact of small changes to the assignment on student perception, without a significant change in instructional style. Another possibility would be to conduct a study of the same basic assignment in a class section taught
by a different instructor. Several instructors on the university campus assign the digital autoethnography. This would allow an analysis of how teaching style impacts processes.

Because the perceived differences in the software for Mac (iMovie) and the software for Windows (Movie Maker) proved so significant in this study, it would be interesting to conduct the study in an environment where all of the students were using the same software. A study of this sort would be difficult in a “bring your own technology” course, as it is unlikely that students would all have hardware on the same platform. Therefore, such a study would likely take place in a context where a class is scheduled in a computer classroom with provided technology. Although this arrangement might mean students could only work on their videos during their time in the classroom space, this would have an added benefit of ensuring that the students would complete their screen capture recording.

In addition to studying this same sort of assignment with different populations and in different contexts, it is necessary to study different multimodal composing situations. Would the same processes of assembling, arranging, and coordinating be observed in the production of different types of multimodal compositions, with varying elements?

This study is also limited by the means of data collection. Where processes are the object of study, where “inquiry into the actualities of writing” (Takayoshi, n.d.) is the goal of the research, researchers face methodological difficulties for both data collection and analysis. While such researchers must observe what student writers do when they write, where they write, how tools are utilized, and how other actors participate in the writing process, there is a lack of tested methods for gathering such data in a naturalistic, non-invasive manner. Geisler and Slattery (2007) suggest that screen-capture software serves as
an “important process-tracing tool in understanding the complexity of digital writing activity” (p. 188). However, screen-capture software can only be as effective as the user of the software. Although the participants in this study were provided software, and were offered instruction in the use of the software, they demonstrated varying degrees of success in capturing their work, saving the captures, and converting them to a file type that could be shared. This issue led to very uneven data collection. Screen-capture software is also limited in its very nature; it only captures what is on the screen. This became an issue with Tyler’s use of the Air Display application that allowed him to use his iPad as a dual monitor. Although this application was useful to him, it limited the data that was collected. If students’ processes involve other “off-screen” work, such as reading a book, or looking up something using another device, the software does not capture these moves. These difficulties serve to highlight the need for continued work in this area, and further work in developing appropriate methodologies for such studies.

This study also generated other possible avenues of further research not specifically related to limitations. Several potentially interesting relationships and tensions emerged in this study that deserve further attention. Generally, speaking, the students who volunteered to participate in this study seemed to be confident students. In my observation, I noticed very early that the study participants were always the first to contribute to class discussion, the first to volunteer to write on the whiteboards during small group work, and the first to volunteer to share. Even Amanda and Maryam, who were quieter in general, gave the impression of having confidence in their abilities. This raises a question about the relationship between confidence and process. What does someone’s confidence level as a
writer contribute to his or her processes? Catherine’s reaction to this project suggests that working with unfamiliar technologies may disrupt a student’s confidence, but this deserves research scrutiny. Writing anxiety has been studied in students of all ages (Daly, 1978; Daly & Miller, 1975; Faigley, Daly, & Witte, 1981) as well as the connections between word processing and writing anxiety (McDowell, 1998), but the connections between multimodal composing and anxiety have not yet been studied. How should this be studied? Current methods of measuring writing anxiety, like the Daly-Miller Test, are not likely valid ways of measuring anxiety in multimodal composing environments, as my premise is that the technology may contribute to anxiety, and Daly-Miller does not address technology. One avenue of research I am particularly interested in investigating is the intersection of technological anxiety, prior experience with technologies, and the increased levels of motivation and engagement reported by scholars such as Prior and Anderson when students work multimodally. Does the anxiety experienced by some students when faced with working with technology (due to lack of familiarity or other factors) offset the potential for increased motivation and engagement, or vice versa?

Other interesting potential relationships are those between anxiety and procrastination and between writing fluidity and off-task behavior that seemed to emerge in this study. Do students tend to procrastinate more when they are anxious about composing? Onwuegbuzie and Collins (2001) found significant correlations between academic procrastination and fear of failure, as well as academic procrastination and task aversion in graduate students. Although participants in this study were not averse to the topic of the assignment, both Catherine and Amanda shared fear and aversion to the technology and, and at least one
participant, Morgan, indicated dislike of the task. Is the relationship between procrastination and fear of failure more prevalent when the students are asked to compose multimodally, or when they are asked to complete any less-familiar composing assignment? Is there a clear relationship between writing fluidity (or frustration) and off-task behavior?

An interesting tension emerged in this study between the students’ desire for less restriction on what they do and their need for support and direction. Although the students perceived that the time restriction on the videos and other assignment requirements limited their ability to develop their videos as they wished to develop them, they also yearned for more support and direction in terms of what type of thesis they should focus on, and what their final videos should “look” like. Particularly when working with less familiar media and genres for composing, more research into students’ needs for support is needed. Further, additional study is needed that compares the processes of those who are inexperienced or novices with multimodal composition with those who are more experienced. Such research has implications for pedagogical interventions into the effectiveness of various processes and the resulting compositions.

**Conclusion**

This study responds to the call for empirical studies in Composition Studies (Anson, 2008; Haswell, 2005; Takayoshi, n.d.) and specifically addresses the need for research investigating the multimodal composing processes of students (Borton & Huot, 2007; Brooke, 2009; DeVoss et al., 2005; Prior, 2004; Shipka, 2011; WIDE, 2005; Wysocki, 2004b). The findings of this study provide a particularistic, descriptive picture of six students composing a multimodal, digital video, highlighting their rhetorical decision-making and
methods of navigating the tools of inscription. In the analysis, I offer graphical representations of the activity system of one student composing multimodally, as well as of the multimodal composing process as it emerged from the data. Finally, I show how incorporating multimodal assignments into a first-year composition course can address the outcomes for first-year composition as defined by the Council of Writing Program Administrators. The results of this study extend earlier process work by offering an empirically grounded description of the tools, constraints, communities of practice, and phases of production involved in a single, school-sponsored multimodal composing activity, reifying post-process (and post-post-process) theories of the broadened focus of issues involved in composing. In offering this description, this study supports the claims of Shipka (2011), Sheppard (2009), Prior (2004) and others who argue for the complexity of multimodal composing.

This study has several pedagogical implications. First, we cannot assume that what we’ve learned about composing alphabetic text necessarily translates directly into multimodal composing. Results of this study suggest that there may be a separation between conceptualization and actualization involved in the production of multimodal text, at least for novice composers. This may be due to students’ lack of familiarity with the technologies of production, or it may be due to the nature of the composing situation. Research comparing the processes of more experienced multimodal composers with novice composers is needed.

In 1971, Emig claimed that teachers of English “underconceptualize and oversimplify the process of composing” (p. 98). We must ensure that we are not guilty of underconceptualizing or oversimplifying multimodal composing by assuming alphabetic
processes transfer, by assuming that students who have “grown up with technology” do not need support working with the technologies required for multimodal composing, or by failing to consider issues of technological anxiety.

Tensions emerging in this study suggest that instructors incorporating multimodal assignments into their curricula for the first time should be mindful of the challenges of such assignments. This study evidences the need to ensure that students have access to training in the specific technologies they will need to use. It cannot be assumed that students will be able to transfer training on a similar program into their interaction with a different program. Further, instructors should carefully consider assignment requirements and limitations and whether or not those requirements and limitations offer a good match with the purpose and the expectations of the assignment. Guides encourage instructors to “start small” with multimodal assignments, and if the intention is to begin with a “smaller” assignment, the expectations of the task should be limited accordingly.

Multimodal composition is not the “end all, be all” of first-year composition, and I do not argue that first-year composition courses should focus exclusively on composing in multiple semiotic modes. However, in a world that is increasingly digital, it is necessary that students be exposed to rhetorical means of composing for media beyond 8 ½ x 11 white paper. To paraphrase from the “Framework for Success in Postsecondary Writing,” students will have opportunities to compose in digital environments; it is up to us to help them learn to do so as effectively as possible (Council of Writing Program Administrators et al., 2011). In order to accomplish the goal of helping students to learn to compose effectively, we need continued research into students’ processes so that we might better understand what students
do when they compose within complex activity systems. This increased understanding will allow us to develop instructional strategies to help students develop from novice into more experienced composers, with more effective composing strategies.
REFERENCES


