Sequential rhetoric: Teaching comics as visual rhetoric

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Sequential rhetoric: Teaching comics as visual rhetoric

by

Robert Dennis Watkins

A dissertation submitted to the graduate faculty

in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Rhetoric and Professional Communication

Program of Study Committee:
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   Margaret LaWare
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Iowa State University

Ames, Iowa

2014

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DEDICATION

to Maren, Emery, Greyson, Baby Girl, Mom, Dad, and Lou Vega
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I would like to thank my major professor, Charlie Kostelnick, for all his work over the years and guiding me through this process. I would also like to thank the rest of my committee, Barb Blakely for her critical pedagogy input, Maggie LaWare for her “comics as enthymeme” idea, Kathie Gossett for her multimodality and methodology suggestions, and John Cunnally for his extensive comics knowledge.
ABSTRACT

With the demand for data visualization and technical visuals perpetually growing, creating effective graphics in professional communication has become even more exigent. However, when students are asked to include graphics in a document, most turn to generic Google image searches or tired clipart without engaging in actual image production. My research project is an empirical classroom study that incorporates progymnasmata to enable students to create and analyze comics in a step-by-step process to promote visual literacy. While other assignments can achieve this as well, the art form of comics offers a broad range of technology approaches (from minimal to elaborate software) based in a familiar, creative approach that helps bridge the digital divide.

My dissertation follows a traditional five-chapter format. The second chapter is a literature review of the relevant theory informing my study, including visual rhetoric, multimodality, comics definitions, comics as ancient rhetoric, and comics studies. The third chapter justifies my methodology, explores the theory that drives my methodology (progymnasmata and critical pedagogy), explains my research project, and explores the codes that emerged. The fourth chapter discusses the different themes that emerged from student’s responses while focusing on those most relevant to my research study. The fifth chapter analyzes the student’s data, interprets it, puts it in context, discusses its limitations, suggests results unique to comics, and recommends future approaches to the study.
CHAPTER ONE: INTRODUCTION

Elizabeth wore every thought and emotion on her face. I often gauged whether my students were comprehending our discussions by watching her expressions. If her brow crinkled, I needed to expand; if she arched her eyebrows, I went too far—her academic views were conservative. So, it didn’t surprise me that when we began our nearly month-long foray into analyzing and designing comics, she voiced discomfort and skepticism with both her facial expressions and her voice. What did surprise me was her reaction after we finished reading our first full-length graphic novel, *American Born Chinese* by Gene Luen Yang. Uncertainty painted her face as she fidgeted the book between her fingertips. I started the discussion with an open-ended question probing for their thoughts. Elizabeth raised her hand and then struggled to find the right words, her brain chewing through her phrasing, before settling on, “this was really good.” This statement didn’t suffice her. She continued, “but I mean, like, *really* good. In AP English, we had to read a bunch of literature books, and this book felt equal to those ones.” Her expressive face blushed when she finished talking; other students began expressing their own opinions, some reflecting hers. Later, she would admit that she voluntarily read the book two full times. Comics had won another reluctant convert, but the question remained whether she would feel so strongly about designing her own persuasive comics.

I too was a hesitant convert to the medium of comics; my conversion didn’t happen until my late twenties, many years after most comic-book readers gave up their beloved medium. Comics are supposed to be for kids, or so the stereotype goes. This bias prevails so widely that the mere mention of comics being the center of my dissertation research causes instant concern from colleagues. Their faces, like Elizabeth’s furrow, seem to say that more serious topics than children’s books demand our attention in academia. One colleague even suggested, “Don’t you think you should call the comics section something else?” His concern is valid and one that I will address in
chapter two. Even Scott McCloud, the crossover comics artist and quasi-scholar writes that “it’s considered normal in this society for children to combine words and pictures so long as they grow out of it” (139). Maybe Elizabeth harbored this prejudice and her confrontation with the power of the medium surprised her. Maybe it was something else. The reality is that ample evidence and scholarship suggest that comics help students learn. While a many scholars debate comics’ legitimization (e.g., Thierry Groensteen’s “Why Are Comics Still in Search of Cultural Legitimization?”), my study foregoes the debate of whether comics are worth legitimization because, like Elizabeth’s reaction, the elegant academic discussion about comics and people’s consistent surprise at the medium’s strength is strong enough proof for this study—I’ll leave that debate to those more equipped to do so. While I love the persuasive power that the medium holds, my research goal differs from presenting comics strictly as a reading tool.

Rather, I am using comics to promote visual literacy in order for students to create visually effective, rhetorical documents. Although I laud research that supports comics’ educational power and efficiency in teaching as well as rhetorical critiques of the art form, this research makes up only a small portion of my own. I focus on having students use comics to inform and/or instruct their audience through visuals. In the 21st century, with the demand for data visualization and technical visuals perpetually growing, creating effective visuals in professional communication has become a need more so than a luxury. However, when we ask students to use images they often turn to generic Google image searches or tired clipart without doing any original design. While they are often able to find useful images, they don’t engage in actual production of images. Comics does this by having students invent a narrative that combines images and words. While other assignments can achieve this as well, comics offers a broad range of technology (from minimal to elaborate software) approaches based in a familiar, creative approach. On top of this it effectively teaches juxtaposition, core writing skills, and hierarchy in a casual and intuitive fashion that may be unique to the medium.
Students have to think about what visuals they will use to represent their information and how it correlates with their words, all while engaging in a remediation process. Their chosen production modes can leap over the digital divide because comics can be created through simple technologies (e.g., pencil and paper) or more complex technologies (e.g., software, apps, digital design). The differing processes produce a similar product while achieving the same goal: competent visual literacy. Students engage in design by using multiple modes to create various informative media, such as hand-drawn, digitally drawn, juxtaposed, sequential, and photographed stories.

My research project is an empirical classroom study that teaches comics as a form of visual rhetoric and multimodal communication. The study incorporates progymnasmata to enable students to create and analyze comics in a step-by-step process to promote visual literacy. This chapter will first focus on the outline of the study, including the theoretical framework, the methodological theory, my overarching research questions, and the dissertation’s scope. Next I will explain what visual literacy means to different disciplines and how I am using it as an umbrella term in this study. Then I will discuss teaching visual literacy through comics including the barriers visuals face, technical comics, teaching comics in the classroom, comics production vs. comics analysis, and writing about comics instead of drawing them. Finally I will conclude this chapter.

Outline of Study: The Purpose, Scope, and Questions

In order to see what affordances both designing and studying comics in a technical communication course allows, I have created a progymnasmata-centered method of teaching and creating comics. While progymnasmata will be explained in detail in chapter three, a brief explanation will help. Progymnasmata is an ancient rhetorical practice that teaches rhetorical exercise in a specific order where each new activity builds upon the previous allowing students to work from the familiar to the strange. I carried out this approach in four technical communication courses taught at Iowa State University from 2012 – 2013. The first two-thirds of the semester followed a
traditional technical communication course based on Richard Johnson-Sheehan’s textbook *Technical Communication Today* with assignments such as professional correspondence, technical descriptions, instructions, and usability testing. Then I initiated the comics section for the last third of the semester. The students read a set of comics that guided them towards creating instructional and descriptive comics. The study culminated in students creating a script based on previous instructional and descriptive writings and adapting it into a script that they designed into a comic strip. The students were given a questionnaire approved by the IRB featuring ten open-ended questions that asked what affordances they gained or lost from studying comics and from composing in the comics medium. The study was done in four different technical communication courses: two sections in the fall of 2012, one section in spring 2013, and one section in summer 2013.

To create a framework for my study, I rely on multiple theories that sometimes conflict with each other. Because of this, I will focus on common elements that can be amalgamated into a more cohesive structure. Not all of the disparate elements need to be justified however, as the differences can add to the richness of the work. First, I will examine visual rhetoric and visual literacy. Then I will explore the multimodal approaches to teaching composition and apply it to professional communication. Because my study spans multiple mediums of production, I examine the concept of digital divide that accompanies new modes and visuals. Then I will explore comics studies to see the work being done elsewhere in the field on sequential art, especially studies that merge communication and writing studies.

In order to justify creating comics in a technical communication class, I will also look at critical pedagogy as a way to address the unfamiliar while analyzing power. The reading selection of comics introduces students to critical themes that challenge their worldview (such as philosophical ideas in McCloud’s writings and the fictional story *American Born Chinese*) within a technical
communication context. I will observe Paulo Freire’s foundational pieces and those that built on his work, including Giroux, Berlin, Villanueva, Schugurensky, among others. I will rely heavily on many of critical theory’s praxis and practice-centered research, from Shor’s classroom democracies, to Qualley’s reflexive writing solutions, to research by Herzberg and Gregory & Graff. Since I am the instructor as well as the researcher, my power could influence my students to participate in ways that might make the results unreliable. While I do address these concerns in my methodology and results section, a critical-pedagogy section allows me to address some of those concerns. While critical composition favors democracy in the classroom, my approach is more traditional. Shor and Stanley Fish have shown that democracy can be difficult or interfere with writing, and writing is a central goal in professional communication. Because of this, I will use the critical theories to build on the ancient practice of progymnasmata.

Relying on Quintilian and those that interpreted his writings, I use the ancients to show how a template-themed style can relate to modern times. For this, I will rely on Bonner, Corbett, Crowley and Hawhee, Mendelson, and Murphy who explain progymnasmata and describe its processes. I will also address contemporary authors, such as Graff and Birkenstein, who defend the value of template writing, as well as Frank D’Angelo’s defense of progymnasmata and imitation-style writing.

The research questions that fuel the theory behind my classroom study are as follows:

1. Can comics be used to teach visual literacy in technical communication?

   Teaching the visual is vital for professional communication and I believe comics can teach this in an approachable and simple way.

2. Does having students design comics teach the necessary visual literacy (visual rhetoric and multimodal) skills required for technical communication?

   Only a small time can be dedicated to teaching visuals in professional communication, so if comics can do an effective job, then that information could benefit the field.
3. How do students respond to creating and studying comics in technical communication situations?

Their responses matter because if they find this approach beneficial, it can be used to encourage teaching comics production as a practical method of visual literacy application.

4. Can using comics as a medium teach critical composition techniques, such as discussing power, authority, and otherness?

This question can counter students questioning why I’m including comics in the curriculum as well as provide students a broader worldview while learning to design.

Whether comics can be used to both teach visual literacy and designing visuals is the overarching question linking these four together.

My dissertation will follow a traditional five-chapter format. The second chapter will be a literature review of the relevant theory informing my study, including visual rhetoric, multimodality, comics definitions, and comics studies. The third chapter will justify my methodology, explore the theory that drives my methodology (progymnasmata and critical pedagogy), explain my research project, and explore the codes that emerged. The fourth chapter will discuss the different themes that emerged from student’s responses while focusing on those most relevant to my research study. The fifth chapter will analyze the student’s data, interpret it, put it in context, discuss its limitations, suggest results unique to comics, and recommend future approaches to the study.

**Visual Literacy**

Throughout this study I will use the umbrella term **visual literacy** as well as more specific visual terms such as **visual rhetoric, multimodality, and comics studies**. The term visual literacy means different thing in different disciplines. In order to define visual literacy more effectively, I will first look at visual literacy across the disciplines before defining how I use visual literacy in this study.
Visual literacy spans more than just visual rhetoric and professional communication scholarship. As Sandra E. Moriarty suggests it’s “a multi-disciplinary, multi-dimensional effort” with a range of scholars coming from “mass communication, film and cinema studies, education, art, anthropology, psychology, philosophy, linguistics, semiotics, and architecture and archaeology among other fields” (309). Moriarty concedes that this leads to an enriched mixture of scholarship and vision, but it also leads to confusion due to a cross-disciplinary lack of a common theory (309). Like Jo Allen, Moriarty doesn’t advocate for a unified, definitive definition, but suggests that more dialogue on what areas in visual literacy should be covered would be beneficial (310).

Analyzing the vast disciplines that cover visual literacy matters because their voice is vital for this study even if their arguments don’t directly impact visual literacy in comics. Peter Dallow, paraphrasing Roberts A. Braden and John A. Hortin, looks at the differing approaches to visual literacies and the key in teaching the production of visuals. They claim that “visual literacy has two aspects: the ability to understand images, and the ability to use them, ‘including the ability to think, learn, and express oneself in terms of images’” (94). Because the majority of research on comics covers reading and/or analyzing comics but not designing them, any source that emphasizes design is worth noting. James Elkins, an art history scholar and editor of the book *Visual Literacy*, writes a similar sentiment to Dallow and Moriarty, especially in his choice to use the term visual literacy. He writes that the words visual and literacy work because they play on the idea that we read images and combining them embraces the seeming paradox of reading visuals (1). Additionally the phrase visual literacy has been used for over 50 years, albeit not frequently (1). Elkins’ goal is to base first-year higher education students’ coursework on a visual model, which he calls “the most important and potentially revolutionary problem in current curricular theory” (3). Elkins’ question of whether an undergraduate education based on the visual is a viable possibility resonates strongest for my argument. Elkins continues, “since the 1980s the rhetoric of images has become far more pervasive
so that it is now commonplace in the media to hear that we live in a visual culture, and get our information through images” (4). While Elkins is advocating for art history, his claim that “it’s time to consider the possibility that literacy can be achieved through images as well as texts and numbers” fits comfortably in the visual rhetoric and professional communication (4 – 5). Elkins suggests others in art history with similar ideas (see Mitchell, Nicholas Mirzoeff, Martin Jay, Jean Baudrillard, and Lisa Cartwright).

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Figure 1: Sandra Moriarty and Allen Brizee’s Visual Literacy Diagram. Composed by Purdue Owl.
In this study, the use of the term visual literacy is in line with Sandra Moriarty and Allen Brizee’s diagram as edited by Purdue Owl (see figure 1), in that it is used as an umbrella term for teaching visual thinking, visual learning, and visual rhetoric. As noted, the term visual literacy can mean many things for many different fields, but in this project, it is a synonym for all visual learning students experience (based in visual rhetoric terminology, multimodal terminology, and comics). When discussing the concept of teaching visual literacy to students through comics, this is what is meant: teaching students to understand how to read and produce visuals using the language available to them and expected of them in professional and personal situations. A few specific goals I had in this study with visual literacy included demystifying design, using gestalt psychology principles, and observing the affordances offered in comics. I will explain these further in chapter two. That being said, my definition of visual literacy was open, as I relied on a grounded theory approach so I could observe the themes that would emerge from students’ responses. I will discuss these more in chapters three and four.

**Visual Literacy Through Comics**

While comics aren’t the only format to teach visual literacy, they offer affordances that may not be present in other approaches. Visual rhetoric has been a vital part of professional communication for decades, and with the advent of multimodality in composition, the role of visual rhetoric has expanded. To this end, the National Council of English Teachers recently called instructors to incorporate multiple communication modes into the classroom, including alphabetic and visual meaning-making systems (“NCTE” 17). Incorporating both visual and alphabetic writing in the classroom can tax an already crowded professional communication classroom and, as the NCTE warns, the digital divide that creates access concerns for students of varying backgrounds can hurt praxis-based research in the discipline. However, these concerns can be addressed by focusing
on comics, a mode of communication that can be used to teach the core elements of visual literacy, multimodality, and professional communication.

In order to explore how comics can be incorporated into teaching visual literacy, this section will look into the barriers visuals face, the potential of comics in technical communication, how comics can be taught in the classroom to non-artists, and a synopsis of the rhetorical moves inherent in comics. While brief (these topics will be explored in much more detail in chapter two), they will provide reasoning behind the literature and empirical approaches I am taking in this study.

**Visual Literacy Barriers**

One of the main roadblocks visual literacy faces is the assumption that alphabetic literacy is more effective than visuals. Paul Lester claims that since the inception of the written word, visuals have struggled with words for dominance with words usually being the winner (ix). David S. Birdsell and Leo Groake point out that the presumption that visuals are inferior and vaguer than words is a biased, outdated notion and the time has come for “a theory of visual argument must be a better appreciation of both the possibility of visual meaning and the limits of verbal meaning” (310). Birdsell and Groake’s interest is especially relevant to this study because they analyze political cartoons, where they offer the observation that words and images can be equally effective or ambiguous. They write, “The meaning of a visual claim or argument obviously depends on a complex set of relationships between a particular image/text and a given set of interpreters” (313).

As defined above, comics works best when blending the verbal and visual. Lester agrees with the idea that comics works best when they blend the verbal and visual and the focus on visuals never means that words are inferior (x). While not specifically referring to comics, Lester’s thesis works in both comics and other blended materials.

Other visual arguments are more explicit in their inclusion of comics. For example, Rolf T. Wigand argues that research in communication has found that pictures demand the reader’s
attention and increase the reader’s enjoyment in slide presentations, teaching, and newspapers (35). These sources are dated, but Wigand (1986) offers various reasons why comics could be an effective medium to learn from. In a pre-multimodal environment he argued that the durability of comics can be attributed to its capacity to span multiple media (55). He observes that research on comics is a “blind spot” in academic writing (56). My literature review will show that since then much more research has been done on comics, but there remains room for more.

Using comics to promote visual literacy has been pursued by other theorists and helping scaffold my research. Rocco Versaci argues that comics “more so than any other visual medium” help instructors teach students to comprehend visuals’ meaning making and encourage engagement—all at the reader’s own pace (“Literacy” 96). With a skillfully designed page layout, the eyes engage in multiple scanning processes without relying on solely left-to-right reading motions (“Literacy” 96 – 97). This is the crux of why comics can work to teach visual literacy in my discussion as well: it helps students read. However, Versaci doesn’t go past the reading into the design element of creating comics and how production skills further students’ ability to engage in multiple mediums.

Whether existing technical comics or those my students create can be taken seriously in the industry is another real concern. Will Eisner played a key role in legitimizing comics, as he was one of the first to explore instructional comics. He called these stories to instruct. His work in PS Magazine combines instructional materials with humor, entertainment, and shockingly sexist notions. He writes, “A process is most easily taught when it is wrapped in an interesting ‘package’ . . . a story, for example” (24). His technical story approach emerged as a theme in my students’ responses. While Eisner was one of the first to discuss the possibility of comics doing more than just entertaining, entertainment doesn’t seem to be a requirement in instructional comics. Still, Eisner’s work towards
the technical and informational are vital for my studies because as he created prototypes of technical comics that made immeasurable contributions to the medium.

While not focused in pedagogy, one of the most helpful outside sources for suggesting comics as an effective learning format for technical communication and instruction comes from researchers Waka Fukuoka, Yukiko Kojima, and Jan H. Spyridakis. They discuss implications of illustrations and expectations in user experience, especially through comics and cartoons. They explain that cartoons are common in Japanese manuals but not American ones (461). Because of this, they hypothesized that Japanese students would view cartoons more positively than Americans due to their exposure to the form, but found that 52 percent of their American audience didn’t mind cartoons in instructions, 34 percent liked cartoons in instructions, and only 14 percent disliked cartoons in instructions (471). The key to this study in relation to my research goes beyond the cartoon toward the finding that users prefer illustrations to accompany each step in manuals. Given this preference to cartoon imagery, it could be argued that the most effective approach, according to this limited data, is to create comics-based instructions. Comics do exactly that—rely on cartoon imagery and having one illustration per step.

While my methodology will detail my teaching approach, looking at similar studies using comics to teach visual literacy will provide a scholarly perspective on this approach. Arguing why visual literacy matters, Lynell Burmark discusses Jerome Burg’s approaches to using visual literacy in the classroom by having students summarize their understanding of literature readings through comics (12). In a personal interview with Burg, Burmark suggests that a “limitation of comic books is that they are restricted to only a very few ‘cells’ and to very abbreviated dialogue”, which force students to amalgamate broader elements into their “essence” (14). This approach ties in with J. David Bolter and Richard Grusin’s remediation theory for understanding new media. This theme appears in my students’ responses as well. Thomas Wolsey offers pedagogical tools from political
cartoon analysis and production. He addresses the concerns many have in not being artists by saying that art quality is not as important as having students dive in and experience the work of remediating a concept as a cartoon (127). These methods are similar to my approach and offer similar results; the end goal here is once again a stepping-stone into a new literacy.

Achieving visual literacy through designing comics can be a powerful tool. Richard Corliss argues that unlike static images, comics force the audience to read images, not just observe them (qtd. in Gerde, Foster 246). I agree with Morrison, Bryan, and Chilcoat but I believe that such research needs to expand beyond elementary school. They also limit the medium’s potential by limiting it to only historical or biographical comics (760). While many of the “serious” comics are biographical or historical, this shouldn’t be a requirement. Furthermore, I argue that in order to fully develop visual literacy through comics, one should both teach how to read and produce them.

The question often arises of why use comics at all if other means are already available. This question can be addressed with an exigency argument: comics are ripe for scholarly exploration as their prominence expands. Jeet Heer and Kent Worcester point out that while film has been around for less time than comics, it already has prominence and a foothold in academia, but the comics scholarship is barely being recognized as legitimate (xii). Like others, Heer and Worcester say that time for further dissection of comics is now. The current trend of creating comics in academia indicates a gradual rise of comics’ ethos in the academy. However, current comics scholarship relies heavily on rhetorical analysis and if instructors incorporate comics as a composing mode, they do so primarily for reflective and autobiographical purposes. While these approaches benefit learners, comics have much more potential and can be used for topics as varied as argument-based manifestos to technical instructions and descriptions. An upcoming special edition of Digital Humanities Quarterly will feature some of the first peer-reviewed comics in the academy, opening the door for comics to be considered as peer-reviewed research. Similarly a comics-based textbook,
*Understanding Rhetoric*, published this past year, drew large crowds at the 4C’s conference with copies of the book instantly selling out and multiple meetings with authors Elizabeth Losh, Jonathan Alexander, Kevin Cannon, and Zander Cannon filling to capacity. Comics are worth studying and offer affordances that other output methods cannot. My study seeks to identify these.

Comics are receiving more attention in scholarship than ever before, but the mounting scholarship rarely focuses on how to incorporate comics as a production mode. Jeff Rice addresses the unintended consequence that focusing on writing *about* images negates writing *with* images: “In much of today’s pedagogy, the preference is for writing about images, not with images” and according to this reasoning it implies that “True writing can only come from reading images, these positions state, not from making images” (135). In scholarship about comics (including this dissertation) the “print logic” bias rules. Rice relates this problem to comics specifically in saying if comics are mentioned by textbooks, they never ask students to produce them, just to critique and analyze them (151 – 152). Gene Lauer suggests that this lack of production in the classroom could be due to instructors’ fear of not having the technical know-how, a lack of production materials being available, or to a lack of time to cover everything in a crowded classroom (38). These three reasons could discourage any instructor from adapting comics as a form of teaching visual literacy. However, part of what makes my approach attractive is comics can be created with unsophisticated technology, and their inclusion can complement rather than replace the current curriculum.

**Writing About Comics**

One uncomfortable reality of this situation is even though my study observes students designing comics, I’m merely doing the same thing Rice critiques: writing *about* instead of *with*. I am comforted in knowing that others have faced similar dilemmas when promoting one mode through a different one. Cheryl Ball puts this succinctly when writing about implementing new media through traditional text:
New media scholarship is so new to humanities fields that I wanted the evidence of this linear article to point toward the exploration of new media texts as directly and conventionally as possible. Had I chosen to discuss this issue through a new media presentation, the evidence for the necessity of moving toward new media would have had less impact. (164)

The same can be said about comics. While *Digital Humanities Quarterly*’s special issue and the *Understanding Rhetoric* textbook are examples of this border eroding, text still reigns. Like Ball, I approach this topic through a linear dissertation because to write my dissertation with comics would lessen the impact. Something similar happened to Stephen Bernhardt after he published the landmark article, “Seeing the Text.” Many commented on the irony of promoting visuals in an article with relatively no visuals. Bernhardt discusses this critique in much of his writing and points out publication requirements often trump pedagogical strategies (“Teaching” 305). This critique isn’t new either: Derrida observed the irony of Plato writing down Socrates’ writing critiques (Donald Palmer 126). In order to discuss a newer mode or medium, the established one needs to be used. I see no problem in this as rhetoricians have relied on this model for millennia.

Elevating visual literacy to a third branch of rhetoric (with the reigning oral and writing sections proceeding it) has been met with resistance but is gradually becoming more established. One particular branch where visual rhetoric has met little resistance is in the field of technical communication, where illustrations and visuals are extremely valuable. While comics is clearly not the only way to teach visuals, it has value and could potentially teach rhetoric in new ways. In order to do this, pedagogical research contains the most value due to my focusing on teaching students visual literacy as opposed to a manifesto to change industry or academic practices. However, before any further discussion of research and theory, a lengthy discussion of the complex task of defining comics must be addressed.
Conclusion

Through this introduction, I’ve shown that the value in my research lies in the rise of the branch of rhetoric known as visual literacy and the practical application of it by teaching comics production. I’ve introduced my research study, the theory driving it, and the research questions, all of which share the common theme of whether comics can be used to both teach visual literacy analysis and production. I described the meaning of visual literacy in different disciplines and how I am using the term in this dissertation. I briefly addressed the struggle visuals face in the academy and countered it with the strong emphasis on visuals found in technical communication. I looked into pedagogy of teaching comics production and analysis to non-artists as well as the rhetorical moves comics naturally make. We can now move onto the literature review of the theory on which my project rests.
CHAPTER TWO: LITERATURE REVIEW

One of the wonderful, but challenging, aspects of creating a study like this is it doesn’t easily fit in with research categories. While my study was done in technical communication courses, elements of it were done in composition courses, too, and it could apply to either. My research relies heavily on visual rhetoric and professional communication but borrows terminology from the composition-based multimodal scholarship. Besides, since there exists no unifying field of comics studies, a discussion of the disparate approaches to comics’ value and pedagogical implications must also be addressed. Because of this, my research covers a good deal of theoretical ground.

To create a theoretical background that justifies teaching students visual literacy by designing comics in the classroom, I rely on multiple theories that can be amalgamated into a cohesive framework. First, I examine visual rhetoric and visually focused professional communication theory. Second, I discuss multimodality, which I incorporate it here because multimodality employs a vocabulary appropriate for the teaching modes used in my professional communication study. Third, I address the digital divide, or concerns about technology access, as it is a common concern running through visual literacy and needs to be addressed for future research among students of varying socio-economic backgrounds. Forth, I offer an extensive review of definitions of comics ranging from practitioners to academics while I address elements of the format. Fifth, I look into comics as ancient rhetoric, where I discuss gutters and enthymemes and offer my blended definition of comics. Sixth, I explore research and theory about comics that ranges across various fields. In particular, I focus on the visual-verbal connection that merges communication and writing studies. These theories create a theory foundation for me to build my empirical classroom study.

Visual Rhetoric
A common theme in writing studies scholarship for the past few decades has been teaching visual rhetoric, but Eva R. Brumberger and Kathryn M. Northcut point out that focusing on the visual has been especially important in professional and technical communication (“Meeting” 2). Visual rhetoric scholarship has been steadily increasing over the past thirty years, yet much of it is still directed towards non-pedagogical, theoretical discussions. While theory and discussion are vital, in order to justify using comics in the classroom to promote visual communication in professional communications, pedagogically focused scholarship matters most for this study. Luckily, some of visual rhetoric’s biggest advocates have also contributed to pedagogical discussions. Although scholars acknowledge complications in the movement, such as evaluation concerns and a lack of cohesive vocabulary, they offer concrete pedagogical examples and practices rooted in gestalt principles.

This brief overview of visual rhetoric will look at how these approaches underpin my present study. To do this, I will first cover general definitions of visual rhetoric in professional communication and the lack of consensus on terminology. I will also cover some of the interdisciplinary approaches to visual literacy that relate to visual rhetoric. Last, I will look at pedagogical approaches from varying scholars in the field of rhetoric and professional communication.

**Visual Rhetoric Definitions**

Not unlike Jo Allen’s general concern about defining professional communication, a sizeable amount of the scholarship in visual rhetoric discusses what is gained and lost by creating an agreed-upon vision of what visual rhetoric entails (75). Entire books attempt to do this too, such as *Defining Visual Rhetoric* and *Reading Images: The Grammar of Visual Design*, where Gunther Kress and Theo van Leeuwen attempt to create an entire visual vocabulary in linguistics. Concise definitions of visual rhetoric vocabulary aren’t easy to come by. Lester C. Olson, Cara A. Finnegan, and Diane S. Hope
offer a definition that, while incomplete, can serve as a framework for this discussion. They suggest that visual rhetoric stems from “embracing a critical perspective that links visuality and rhetoric, locates the study of visual rhetoric within a disciplinary framework of communication, and explores the role of the visual in the cultural space of the United States” (1–2). They divide it into three assumptions: 1. To study visuals, it has to be in context of where and how it appeared—not in isolation 2. The visual, as argued by Bruce E. Gronbeck, is integral to the study of rhetoric because elements of it have existed since ancient times along with text and talking. 3. The vocabulary of visual rhetoric must be founded in the rhetorical tradition and “conceptual resources” from other fields (2). Essentially, they are establishing a framework for valuing the rhetorical power of images alongside the verbal.

Many others argue for reconciling the verbal and the visual and how establishing a definition of visual rhetoric can be problematic. Cara E. Finnegan argues that defining visual rhetoric could result in “reinforcing the subordinate status of visuality” or, in other words, the visual preface serves not just as a clarification but also as a pejorative (198). Finnegan’s concern about defining visuals coincides with the previously discussed complication in defining comics. Sonja K. Foss offers a similar sentiment to Finnegan while advocating studying visual rhetoric. Foss argues that studying visual rhetoric makes the field more inclusive because the rhetorical tradition has often relegated the visual to inferior status and ignored its impact (303). Regardless of whether the visual just simplifies categorization or creates a power struggle, definitions still matter to many scholars.

A concern for most scholars is creating a unified definition with shared vocabulary. Kathryn Northcut sought to solve this by collecting data from visual rhetoric instructors and found that “teachers of visual communication do not have a shared understanding of terminology and concepts, and further, have difficulty evaluating visual artifacts consistently” (“Evaluating” 185). This problem of not having a unified vocabulary is mirrored in students’ own identities. For
evaluating images, she argues for a critical approach based on Andrew Feenberg, which means humans should use technology tools in positive ways to achieve desirable results (“Relevance” 255). Students will find they lack a vocabulary for describing images and they’ll usually evaluate instead of describe (“Relevance”259). Northcut offers solutions to this by having students work on creating illustrations, which will allow them to distinguish between expert and novice illustrations (“Relevance” 260-261). These calls for unified vocabulary are also found in Bernhardt’s and Brumberger’s writings.

Useful scholarship dedicated to defining visual rhetoric exist across ranging across multiple disciplines—as Olson, Finnegan, and Hope suggest—but the main focus in this section focuses on professional communication theories. While much of visual rhetoric scholarship discusses theory and manifestos, many advocate visual pedagogy (such as Kostelnick, Barton & Barton, Heller, Lanham, Kress, Odell). It’s important to look at some of the pedagogical implications of visuals in professional communication.

**Visual Rhetoric Pedagogy**

Many academics have covered pedagogical elements of visual rhetoric, including some of pioneers. Stephen Bernhardt helped initiate the visual rhetoric movement in professional communication in the 1980s with his article “Seeing the Text.” Bernhardt often argues for practical methods, such as arming students with writing, design, and technical skills for their futures (“Teaching Visual” 310). Bernhardt realizes that there are obstacles for teaching visual rhetoric but suggests these can be overcome by basing visual evaluation in gestalt principles. Like other scholars, Bernhardt worries that evaluating student’s visual design isn’t as simple or as intuitive as evaluating their writing. Part of this is because visual documents are meant to encourage selective reading, and it is difficult to measure changed reader behavior (“Seeing” 103). This concept is mirrored by Richard Johnson-Sheehan’s assertion that readers are “raiders of information” (9). This section
looks at the unifying call for using gestalt psychology as evaluation criteria, demystifying design, and using technology as a tool, not as the focus.

Even before Bernhardt’s admonitions for visual rhetoric in 1986, Ben F. Barton and Marthalee S. Barton suggested themes that have been repeated ever since, namely that visuals need a stronger rhetorical and perceptual framework, the latter based in gestalt psychology (Moore and Fritz 389). Often the idea of gestalt is explained as the whole being greater than the sum of the parts of a document, with the main groupings being, “good form, closure, separation, alignment, proximity, repetition, contrast, and equilibrium” (Northcut “Evaluating” 190). Bernhardt also argues for a gestalt approach and suggests that we should focus on the totality of the document’s impact on the reader (“Seeing” 99). Other scholars echo this, for example one of Brumberger’s five principles of teaching professional communication is recognizing gestalt-based design principles (“Teaching” 99-100). Northcut did a survey on what elements instructors use to teach visual rhetoric and found that most evaluative criteria stems from Gestalt principles—regardless of whether the instructor knew the criteria’s gestalt origin (“Evaluating” 190). These scholars argue that in order to teach a more quantifiable version of visual rhetoric, the criteria should be based partly on gestalt principles.

Like Bernhardt, Eva R. Brumberger has contributed to visual rhetoric and communication scholarship, and she especially emphasizes pedagogy in professional communication because visual rhetoric and its interplay with verbal rhetoric are vital to professional communication (“Visual” 319). A common concern in the scholarship is the worry that design overwhelms students. Brumberger seeks to “demystify . . . design and visual thinking” (“Making” 383) by “making the familiar strange” (“Making” 383). She suggests this can be done by observing normal things in new and challenging ways (“Making” 384). Having students notice and analyze the visuals that surround them helps simplify the evaluation process and helps them build a more cohesive vocabulary in the field. Brumberger also counters the common student complaint of a lack of artistic ability by arguing that,
although students don’t think they have drawing skills, if they engage in sketching their ideas on paper, it forces them to explore alternatives. Like a freewrite, the sketches are an invention tool and not a representation of a finished product (“Making” 394). Essentially, Brumberger wants her students to engage with visuals by creating visuals and then defining what they do. She suggests doing this by imitating the community-based projects supported in professional communication scholarship.

Brumberger’s approaches often rely on a process approach to teaching design, which should appeal to many pedagogical-conscious instructors. Brumberger suggests having students sketch and compose in an open atmosphere, not unlike studios in architecture courses where students keep a sketch journal that carries equal assessment weight as the finished product (“Making” 385). This idea of a process-centered approach to helping students develop visual skills is echoed by Bernhardt, when he writes that focusing on end-product design only overlooks the valuable design skills being incorporated by students (“Teaching Visual” 307). Valuing the journey in design as well as the product helps students approach visuals in an appropriate way and fits in with my comics pedagogy.

Many instructors claim they have no authority to teach visuals. Northcut, alongside Brumberger, sympathizes with this concern because most writing instructors weren’t trained as artists (“Resisting” 459). To overcome this they suggest having the instructors and students be versed in “interpretive and productive competency”, meaning they must first incorporate skills for evaluating and analyzing images and then produce those images (“Resisting” 460). Northcut and Brumberger argue that instructors need to focus on catering to the intended audience and purpose and not to be distracted by the technology (“Resisting” 460). Focusing on the mode can help instructors overcome their lack of authority. This low-tech approach is supported by Charles Kostelnick who writes, “if technology is only a tool, a means to an end, instructors need to be wary
about letting it sabotage student learning by truncating the invention process and curbing the student’s inclination to think creatively and flexibly about design solutions” (266). Bernhardt suggests using technology as a means to facilitate broader rhetorical discussions as well (“Teaching Visual” 308), and Brumberger recommends emulating the studio atmosphere of architecture classrooms where technology is used secondarily and discouraged in early stages (“Making” 390).

Northcut and Brumberger argue that students often get caught up in the techniques of the technology so that they neglect appropriate rhetorical decisions on whether the visuals they are using are appropriate (463-464). The danger becomes in using technology tools as crutches instead of as tools to aid the student’s rhetorical design (465). Technology is good, so long as it’s used appropriately. Designing comics can fully incorporate or bypass technology completely. These methods promote visual vocabulary and help instructors become comfortable with their capacity to critique and comprehend visuals.

**Visual Rhetoric Wrap-up**

This section examines how visual rhetoric offers a framework for my research into comics. First, I explore the call for the differing language in the field and how we can find unifying trends. Then it looks at demystifying design through process means and helping students focus on the visual process, not the visual product. Both of these are key to my comics studies, and I even propose that some of the missing, unifying vocabulary can be found in multimodality, which I discuss next. I also look at how technology is a tool for teaching, not the focus of teaching (a topic that will reappear in the digital divide section).

Relying on visual rhetoric scholarship based in pedagogy shows that although the topic is still being healthfully debated and dissected, there are unifying trends that appear when we study the evolution of the field over time. Essentially, this comes down to using gestalt principles for evaluation, technology to aid comprehension and not as a crutch, process theory as a framework, a
demystifying approach to design, a more unified design vocabulary, visuals for deeper rhetorical comprehension, and the grid and layout to teach how texts are constructed. One popular approach to teaching visual layout and design can be found in the primarily composition-based movement of multimodality.

Multimodality

When the NCTE released the “NCTE Position Statement on Multimodal Literacies”, they reaffirmed the years of advocating from academics working towards a more inclusive definition of what constitutes writing. The statement argues that multimodality should be a reality in the classroom: “The techniques of acquiring, organizing, evaluating, and creatively using multimodal information should become an increasingly important component of the English/Language Arts classroom” (18). If students resist this idea, as they often do in comics—the common complaint being that they’re not artists—the responsibility is on the students, not outside experts (20). Writing instructors aren’t off the hook either because they must familiarize themselves with the technology too (21). These stipulations are found in the scholarship of multimodality.

In many ways multimodality and visual rhetoric share similar goals, but often have differing viewpoints on definitions and applications. This section will look into why I am using multimodality scholarship to justify visual literacy in the technical communication classroom. To do this, I will first look at the New London Group’s use of multiliteracies and the conglomeration that birthed the current version of multimodality. Then, I will look into the notion that even though the term is recent, the application of multimodality has a larger history more akin to visual rhetoric’s movement, as well as the difference between the terms multimodality and multimedia. Next, I will address the concern that some scholars in professional communication have with the term multimodality and why I choose to use it in this study. Then I will analyze differing methods for production of multimodal, multimedia, and visual documents. I will also address the concept of affordances and
why they matter when discussing using other mediums in the classroom. Finally, I will look at the way the New London Group define *design* and how I incorporate their meaning in my study.

**Multimodality Definitions and History**

A discussion of multimodality usually starts with The New London Group, since they invented the term and nearly every multimodal article cites them. In their manifesto, The New London Group is more concerned with multiliteracies, with the term multimodality appearing as one of their six “functional grammars” (198). However, multimodality is greater than the previous five grammars, because “it represents the patterns of interconnection among the other modes” (198). They call multimodality the most important mode (200) and even suggest that all “meaning-making is multimodal” (201). Concrete definitions of the meaning of this will come later, but in order to arrive at a definition, it’s also important to look more at the term *multiliteracies* that the New London Group advocate.

This pedagogy of multiliteracies is still based in multimodality, but situates itself inside four factors that they list as:

- **Situated Practice**: “based on the world of learners’ Designed and Designing experiences”
- **Overt Instruction**: “which students shape for themselves an explicit metalanguage of Design”
- **Critical Framing**: “which relates meanings to their social contexts and purposes”
- **Transformed Practice**: “which students transfer and re-create Designs of meaning from one context to another” (203).

Of those, Overt Instruction relates most to this discussion because they define it as the pedagogical means used by instructors that focus on scaffolding, on how their experiences relate to other learners, and on helping learners to use their new knowledge with previously gleaned learning (205).
Progymnasmata can be incorporated as a method of overt instruction, as can focusing on multimodality.

The New London Group is often credited with the rise of term multimodality, but many scholars are quick to point out that although they popularized the term, they didn’t invent the concept. Instead, elements of multimedia pedagogy had been incorporated in writing studies since at least the 1970s. Paul Briand was one of these early pioneers of multimedia, using tape recorders and filming as methods for students to create writing. Even forty years ago, Briand predicted that computers were the future of composition (qtd. in Lauer 23). The rise of computers and their accessibility is what led to the concept of modes being addressed. This difference between modes and media matters for a discussion on design and comics. Claire Lauer argues that multimodality has existed in various forms since the 1970s in composition but usually it was just called multimedia. It wasn’t until the New London Group’s influence in the 1990s prevailed that the term multimodality began to be used. Because of this, industry still uses multimedia and composition scholarship uses multimodality (39). Visual rhetoric discussion in professional communication circles dates back as far, if not further, and usually avoids the phrase multimodality in general.

Emphasizing teaching the strategies of using mediums/media instead of the finished products remains a common theme in these discussions. Bernhardt writes about how oftentimes teaching technology is more about teaching change because the technology perpetually evolves (“Teaching for Change” 604). Bernhardt’s scholarship originates in technical communication, where the term multimodal.

Since I'm discussing technical communication, it may seem odd that I use multimodality then. I do this because the -media part of multimedia and the -modality part of multimodality serve separate functions, and discussing these differences matters for my topic. Modes and media are more about the indented audience or the stage of the design. Gunther Kress argues that modes are
the resources used to create or represent while medias—or mediums—are how messages are
distributed or disseminated but both are “independent of and interdependent with each other”
(284). For example, a finished comic book or an online comics is a media, whereas the process of
creating comics in the classroom is a mode. My main goal is to use multimodality because the
finished product of comics matters less that the mode process of creating and representing visual
literacy.

The difference in modes and media from Kress’s definition mattes but appears to be ignored
by technical communicators. Claire Lauer did a keyword search in leading journals in the field,
including TC, TCQ, BCQ, IEEE, and JTWC and found that the term multimedia was cited 243
times and multimodality only thrice (32). She offers a reason for this, though, because professional
communication focuses heavily on producing skillsets in students that they can use in internships
and industry it would be a disservice to the use the academise term multimodality when few in the
industry would know what it means (33). While such may be the case, it could be that others aren’t
as familiar with Kress’s emphasis on the process vs. the product in emphasizing the two terms. My
focus on visual literacy lies in the creation stage, so multimodality seems more fitting overall. That
said, in the classroom I wouldn’t use the term multimodality; instead I would rely on multimedia.

This isn’t to critique professional communication’s reluctance to use the term. In fact, the
field has been historically much more progressive in adapting to using visuals. Diana George
discusses the visual literacy of composition classrooms and how it receives less attention than in
professional communication. This relates to Lauer’s discussion of the term multimodality rarely
showing up in professional communication scholarship. George writes, “for a number of
compositionists over the years, the technical writing course was exactly where the visual belonged”
(214). George believes this separation occurs because of professional communication’s focus on
function and composition’s focus on literacy. But she writes, “That is not at all to dismiss the
extensive work that characterizes professional communication’s engagement with the visual. Instead, it is my attempt to bring composition studies into a more thoroughgoing discussion of the place of visual literacy in the writing classroom” (214). I argue that the two can be married happily, and the different theories can be woven together to create a discussion on literacy and function. In order to do this, a focus on creation is vital.

**Multimodality Affordances and Production**

One of the main themes of multimodal scholarship and pedagogy is the focus on production of—and not just analysis of—images. As mentioned, my visual rhetoric goal resides in production, which makes multimodality relevant for analysis. Jeff Rice discusses the tendency for composition studies to prefer textual analysis in that “we hear Rader using the word *interpretation* in his review essay of visually oriented textbooks and not the word *production*” and “despite sporadic references to production . . . stress the idea of ‘critical thinking’ repeatedly, a concept whose origins are in reading, not in producing texts” (135). Rice surmises that the message being sent is writing can only concern itself with reading images and not writing about them, or to “ask students to ‘see’ images as texts and write about them, but never to write with images” (135). One of the goals fueling my research was to get students to write with images because doing so matters for their professional careers. As Rice mentions, students aren’t being asked to write comics but to merely analyze them using reading theory techniques (151 – 152). Reading has value, but production is where learning happens. This concept appears throughout multimodality.

At the core of production in multimodality lies the need to create visuals. As Murray argues, in multimodality instructors must incorporate “textual modes that are, themselves, nonverbal: pictures, words, colors, drawings, sounds, et cetera” (326). Cheryl Ball echoes this multiple modality when she defines new media scholarship as “online scholarship that uses modes such as audio, video, images, and/or animation in addition to written text to make meaning” (164). While Ball
warns that some may interpret these modes too be too artistic for their skillset, we need to overcome the fear of their inherent otherness (164). A great step in the comics discussion comes from Digital Humanities Quarterly’s upcoming comics-themed journal created with comics. Ball writes about the rarity of scholarship’s use of the modes they are promoting with most looking like they “just as easily have been published in a print journal as in an online journal” (166 – 167). While comics doesn’t encourage all of these modes, some digital comics add motion and sound with varying effectiveness. There are motion comics; iOS and Android apps that are progressing with animated comics; online comics that experiment with time and hypertexts; and Korean comics specializing in hijacked scrolling techniques. However, the focus should be on the approaches to teaching modes, not the outputted media.

Focusing on visuals stirs familiar critiques, such as Carolyn Miller’s assertion that many will oppose multi-modes in teaching because an instructor’s main goal is in teaching writing (“Humanistic” 326). Yet, Miller suggests that creating “clear” arguments, sentences, and images are a type of visual composition and shouldn’t seem so foreign (“Humanistic” 326). While many fear the inclusion of comics and visuals, they need not, since—as Miller suggests—the end goals are similar in regardless of the production modes.

While Rice is focused on composition’s hesitance in adapting visuals, Diana George relates the problem to both professional communication and composition’s reluctance to make students producers. She writes that we rarely encourage students to move from visual critics to being visual producers (213). She worries that while the profession would be comfortable with students studying visuals (such as comics), producing them takes it too far: “As a tool for literacy instruction, then, this collection uses visual media as little more than a prompt for student essays and stories, a substitute for more traditional literary forms, or a subject of scrutiny” (216). George does admit she’s not certain if the move from analyzing visuals to producing them will achieve the New London Group’s
goal of multiliteracies (217). I argue that the journey of discovering what affordances producing visuals offers has as much value as using visuals as mere essay catalysts.

What “affordances” comics enable has central value to my research, and this concept appears to be central to multimodality studies. Jeff Bezemer and Gunther Kress relate affordances to modes: “A mode is a socially and culturally shaped resource for making meaning” (237). Bezemer and Kress include as examples, “Image, writing, layout, speech, [and] moving image[s]” (237). They expand on how affordances relate to modes in that affordances relates to the “potentials and constraints for making meaning” inside of modes (237). Kress elaborates on this topic of affordances by discussing the need to find the “principles that will show the ‘affordances,’ distinct potentials and limitations for representation of the various modes” (290). Kress argues that one of the key reluctances in accepting new modes comes down to power and customs as well as traditional writing offering certain affordances that visuals might not have (297). Conceptually, creating comics in the classroom doesn’t seek to commandeer writing modes, but works as a complimentary mode. Using Kress’s arguments, comics might help students gain affordances that other modes cannot.

The goal of using multimodality, and comics in particular, is to see what affordances they offer. Anne Wysocki reaffirms Kress’s goals and adds to it her desire to understand what all modes make possible and how they shape “the actions of others” (306 – 307). Carey Jewitt reflects on this when she writes about the tendency of some to separate images from words and the differing knowledge that can result from this separation. Studying that difference can lead to useful meaning making (316). The beauty of focusing on modes in teaching comes from learning what students learn and gain from new materials and approaches. Whether the solution is as bold as Jody Murray’s statement that writing can not just be “enactment of alphacentric literacies because it is no longer the case that monomodal, alphanumeric texts encompass the entirety of textual production” or just a
way to approach visuals from a new angle, the design of comics as multimodality is vital (325). On that note, it will benefit my discussion to define the term design.

In multimodal scholarship the term design is often used as a synonym for composition, document creation, or writing. The New London Group writes that design “emphasizes the relationships between received modes of meaning (Available Designs), the transformation of these modes of meaning in their hybrid and intertextual use (Designing), and their subsequent to-be-received status (The Redesigned)” (201). Lauer points out that not much difference resides in using the terms design or composition. Instead “design” allows a verb that broadens the idea of writing from traditional essays into all writing styles (334). Jeff Bezemer and Gunther Kress define the term design as it’s used in multimodality as “principles of composition” (233). This distinction matters because as Andrea Lunsford argues, due to the myriad of communication strategies that keep appearing, it’s “increasingly difficult to categorize writing in terms of the old, familiar modes” (65 – 66). An example of this occurred as I created proposals to present this topic. I found it increasingly more difficult to explain whether I was referring to students creating, or designing, comics in the classroom primarily because of the vocabulary. If I refer to them as composing comics, it seems like some sort of musical approach. If I refer to them as writing comics, the verb writing can be confused with alphanumeric modes that might only mean creating a script or analysis. Because of similar problems, scholarship in the field uses design. I find this a useful word, and one that I will use as a synonym for creating comics.

Multimodality Wrap-up

This section looked at multimodality and how a term generally used for composition studies can be used for teaching technical communication as well. I did this by first looking at the origin of the term from the New London Group and how the concept had existed by varying names for at least forty years. I looked at how multimodality often refers to the process of visual design while
multimedia refers to the production of visuals. Then I observed the use of multimodality vs. multimedia and how visual literacy in general fits in with professional communication scholarship while showing that multimodality can fit into the discipline. After that I analyzed various production methods used for multimodality. Next I looked at the affordances gained and lost in new mediums and how a discussion of affordances matters if we are to learn from my research study. Finally, I looked at the definition of design as it’s used in multimodal scholarship and how it appears to be a more apt term when discussing the production of comics than writing, composing, or creating.

One element that’s made comics so fascinating to use as a mode for teaching visual literacy is its inherent ability to use new technology (software, tablets, screens) or in archaic technology (paper, ink). Because of this, it serves as an approach that can be achieved with varying states of technology. This is helpful, due to the amount of discussion on access concerns.

The Digital Divide

One of the most appealing things about teaching comics production in the classroom lies in the reality that comics aren’t dependent on any one writing strategy, design choice, or particular software. Instead, it can be created in multiple platforms that can cater to various needs, regardless of the available technology. Nonetheless, often visual literacy and multimodality engender concerns about what is known as the digital divide, or the unintended consequences of forcing technology on students from varying socio-economic backgrounds. Because of these concerns, the digital divide needs to be discussed.

This section will first examine the NCTE’s call for various modes of teaching and the definition of the digital divide. Next, I will look at differing socio-economic classes in the classroom and the recent plunge in technology cost. Then I will look at ways some scholars and teachers have suggested for bridging the digital divide and how comics can be used as a temporary bridge.
Digital Divide Definitions

Not only does the NCTE call for teachers to incorporate various modes of teaching, but they also address the unintended consequences that a pedagogical focus on the digital can create problems in the availability of technology for all socio-economic classes, genders, and races. The NCTE advises that students who had difficult learning environments might not share the same literacy foundation as others but that doesn’t mean they are deficient in practicing multimodal literacies by a natural, spontaneous combination of “drama, art, text, music, speech, sound, physical movements, animation/gaming, etc.” (NCTE 17). William Kist suggests that the availability of digital literacies is not universal or continually available in every situation (qtd. in NCTE 19). While some scholars, like Charles Moran, call this problem access issues, the NCTE labels it the digital divide, which appears to be the more popular term in scholarship. Regardless of the title, the NCTE advises instructors and department that they must “bridge the digital divide, providing access and resources for all students” (20). This theme reappears frequently in the conversations on the topic of technology.

Since institutions vary in available funds and the students come from varying socio-economic backgrounds, the digital divide needs addressing. Charles Moran worries that scholarship hasn’t acknowledged that access to technology usually depends on social classes and money (205). Cynthia L. Selfe and Gail E. Hawisher echo Moran’s arguments relating to technical communication. They argue that the digital divide won’t ever be fully satisfied until technology gets recognized as a “vital, multidimensional part of a larger cultural ecology” (535). Self and Hawisher accentuate that these divisions are especially worth studying in relation to race, class, gender, and age (532).

It’s important to note that Moran, Selfe, and Hawisher are writing at the turn of the twenty-first century, and technology has since become more affordable. Moran estimated that students needed to pay $2000 for a computer and $500 for a printer (“Access” 209); however in 2014, a smartphone,
tablet, or netbook can be purchased for less than $500, and the need for a printer has greatly
diminished, but if needed can be purchased for under $50. With the rise of smartphone technology
being the fastest adopted technology in the history of the world, some of these concerns become
less pressing. Bertram C. Bruce wonders why access is a taboo at all and that access issues might be
a symptom of other factors (223). Moran counters this idea by pointing out that even if a writer gets
any sort of advantage by software, then access concerns should take precedence (“Technology”
220). The conversation may be just another element in the pile of taboos, as Bruce observes, or it
could be the most pressing issue as Moran suggests, but the reality is that while the divide may be
diminishing economically, it is still an important topic.

**Digital Divide Bridges**

The solutions to bridging the digital divide vary. Moran hints at a Freirean future with equal
access to everything, including technology (220). Charles Kostelnick argues for a callback to the
process and methods because “technology can be as potentially insidious to professional
communication students” (265). Kostelnick isn’t arguing for a regressed approach to technology, but
instead for instructors to remember the focus of using technology in the first place is to facilitate
writing and designing (279). Northcut and Brumberger offer similar advice by arguing that
instructors rely on technology because of their lack of training in art and design. Additionally,
students comment that learning a new software offers more value than learning theory (462). But the
danger in this is “the technologies for production do nothing, in and of themselves, to promote the
process of effectively applying design principles” and may even “undermine the learning process”
(463). This theme of technology for technology’s sake is found in other scholarship.

The multimodal approach to comics is an effective solution to teaching visual and digital
literacy while bridging the digital divide because the modes involved are both digital and print. As
the NCTE argues, the goal of multimodality is not merely to use new media and electronic texts
because it limits students’ access to other modes (18). Because comics are multimodal, students learn how to approach technology and software as they experience different approaches to creating the comics. The medium can be published in multiple media, ranging from digital scrolling, scanned drawings, and computer-designed imagery to hand-drawn pieces and software-created avatars.

Having taught in institutions, like the ones Diana George mention, whose technology barely includes overhead projectors to ones with the most modern technology, I too have found that “students will continue to work with whatever technology…they can get their hands on” (George 228). Marvin Diogenes and Andrea Lunsford define writing as a technology that sustains thoughts through frameworks that uses known paradigms from other frameworks that use “signs and symbols,” incorporate “materials drawn from multiple sources,” and take “advantage of the resources of a full range of media” (8). Their definition for writing is more in line with this idea of using technology as a framework than what many other scholars consider writing to be. Using comics as a design tool allows the instructor to use whatever state of technology is available, and the visual literacies learned should be similar to those gained from other technological approaches.

**Digital Divide Wrap-up**

With the need to embrace 21st-Century writing techniques, the unintended consequence can exclude groups that have less access to technology. Because of this, we want to address the digital divide (or access concerns) because not to do so indicates an inappropriate power play. While technology becomes more affordable and the technology gap lessens in the classroom, there still needs to be discussions of power and digital divide. Comics serves as a temporary solution to teach 21st-Century writing skills that can fully embrace new media technologies or rely on cheap and widely available design mediums.
Defining Comics

In any discussion of comics, the task of defining the genre inevitably arises. Heet and Worcester put it mildly when they write that the field has long been working on the “surprisingly difficult task of defining comics” (xiii). Thierry Groensteen even titled an article about defining comics “The Impossible Definition.” On the surface, this task seems easy: after all most readers already have a notion of what comics are in their minds. Sure, they might have some misunderstandings, e.g., confusing an art form as a synonym for superheroes, not distinguishing the difference between cartoon and comics, or mistaking it as an outlet only for humor. But most people recognize a comic strip when they see one. In the eight classes in which I carried out a version of this study, I asked students what they thought comics were, and most instinctively knew; they just needed to be nudged toward a more precise definition. Then why is so much scholarship and criticism spend debating the definition of comics? The answer is complex, but it comes down to the fact that any definition that describes comics has to grapple with the boundaries of the medium that either excludes or includes something that should or shouldn’t be included.

A long, extensive debate exists inside and outside scholarship on what comics means and what the proper word used to represent a difficult-to-define medium should be. This isn’t surprising given the tendency of any term used in academia to be endlessly clarified and debated; what is surprising is those that create the medium also cannot agree on what comics is and what defines it. Are they a mixture of words and images? Are they a series of images placed next to each other to tell a story? What’s the difference between cartoons and comics? Can comics be a single panel? Do comics have to be static? Can comics include audio and movement? Do comics require words or images, for that matter? Is ancient art told in a sequential pattern also a form of comics? The answer to most of these questions is both yes and no. And here is where the debate becomes complicated.
Because of these complications and the long definition debate, this study needs to explore the many conflicting and merging definitions on what comics is (and whether that sentence should read “…comics is” or “…comics are”). In order to do this, I will examine both practitioners of the art, critics of the art, and academics who study the art. The best way to do this is to start with exemplary practitioners: Will Eisner’s definition, followed by Scott McCloud’s expansion of it, and will interweave Dylan Horrocks’ famous critique of McCloud’s definition. This will be followed by the terminology used to define comics, the difference between cartoons and comics, and then whether the need to define and categorize comics is even needed or possible. I will cap this discussion with my hybrid definition that will serve as the background to my study.

**Comics Practitioners’ Theories**

Before a scholarly conversation on comics begins, it’s helpful to look at the practitioner theorists who established the foundations on which all outside critique and academic scholarship relies on: Will Eisner and Scott McCloud.

Will Eisner’s *Comics and Sequential Art* attempts to make comics both a viable art form and a topic worth studying¹. Eisner wrote this book initially for a course on sequential art at the School of Visual Arts in New York City and it was presented in his *The Spirit Magazine*. Will Eisner’s portfolio spanned over seventy years and he spearheaded both experimental genres and innovative approaches with the medium. It was Eisner who gets credit for having dabbled first with the full-length comic (which he titled the graphic novel), instructional comics, educational comics, and more. *Comics and Sequential Art* introduces the phrase “sequential art”, which Eisner defines as “an ancient form of art, or method of expression” that “has found its way to the widely read comic strips and books which have established an undeniable position in the popular culture of this century” (5). In

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¹ I’ve corrected many of the odd grammatical and structural mistakes found in Eisner’s writing for this study, except for his overuse of ellipses.
other words, multiple forms of sequential art exist, and comics just happens to be the most effective one. The book itself is not a comic book, but features comics as illustrations, which he separates by saying a comic image “replaces text” while “an illustration simply repeats or amplifies, decorates or sets a climate for mood” (153). *Comics and Sequential Art* uses comics examples (all Eisner’s) as illustrations to reiterate his discussion points but isn’t a comic book. Instead it reads like a book with ample illustrations (see figure). It wouldn’t be until Scott McCloud that a comics artist would create theory through the medium itself, but Eisner’s definitions helped pave the way for theorists and artists alike that followed him.

Eisner’s book covers a lot of ground, including topics like imagery as a communicator, letters as images, images without words, the framing of time and timing itself, the panel, and many others. Like Hatfield’s discussion of wordless pictographs, Eisner discusses the need for showing gestures and body language for silent interactions (57). Eisner discusses the complexity of reading comics, arguing that the reader must actively interpret the visuals on an aesthetic and intellectual level (8). These complexities are some of the same I use in my argument about using comics to teach visual rhetoric.

While *Comics and Sequential Art* revolutionized the discussion on comics, actual definitions are sparse within its pages. In Will Eisner’s follow-up book, *Graphic Storytelling and Visual Narrative*, he provides storytelling and drawing advice, but also offers concise definitions of the terms graphic narrative, comics, and sequential art. He defines graphic narrative as a “generic description of any narration that employs image to transmit an idea” that includes both comics and film (6). Although his definition of comics focuses on medium parameters—such as the use of balloons and printing in sequence (6)—the definition that brought him fame revolves around his definition of sequential art; to Eisner the phrase merely means, “train of images in sequence” (6). Eisner argues that while comics are a form of sequential art, they aren’t the only form. For example, both the Bayeux
Tapestry and comics would be sequential art but the Tapestry is not a comic. These definitions are still more implied than stated in his piece. For more concrete definitions, I will turn to Scott McCloud and other critics and scholars.

Scott McCloud credits Eisner with coining the phrase “sequential art” as a concept meant solely for comics (5) even though I’ve shown that Eisner didn’t exactly say that. In Eisner’s book *Comics and Sequential Art* the title indicates a separation that McCloud never fully acknowledges. I don’t think McCloud discounts Eisner’s definition of sequential art including other forms besides comics, but he makes the leap of making comics and sequential art synonymous. However, this simplification leads to some of the confusion in Dylan Horrocks’ critique of McCloud. The term shows up in the title of my dissertation because of its current popularity and synonymous quality with the medium of comics. As noted above, a key difference between McCloud’s writing and Eisner’s is that McCloud created his manifesto through the medium of comics and doesn’t use comics as mere illustrations. Because of this, when citing McCloud (and other comic practitioners), I often focus only on the alphabetic text, but meaning-making happens in the imagery too. I invite the reader to explore the actual texts for a full comprehension of the topic.

Since many writers use McCloud’s definition as the basis for their own definitions, it’s important to analyze his writing further. In *The Language of Comics: Word and Image*, editors Robin Varnum and Christina T. Gibbons admit that McCloud is the reason they put together their collection and that *Understanding Comics* “may have prompted more scholarly discussion on comics than any other book in the English language” (xiii). In many ways, the entire book *Understanding Comics* could be considered an extended definition, but McCloud expands on his sequential art as comics definition specifically in chapter one. He explains that movies aren’t comics because they aren’t juxtaposed, which is key to McCloud’s argument. Before arriving on his final definition, he brainstorm with a straw-man audience critiquing his claims. He eliminates the term “art” because it
suggests judgment, suggests the definition has to be careful to not be synonymous with *words*, argues that comics don’t need words, and claims that comics don’t have to be about superheroes (8 – 9). His final definition claims that comics is a noun that “is plural in form, used with a singular verb” that is “juxtaposed pictorial and other images in deliberate sequence, intended to convey information and/or to produce an aesthetic response in the viewer” (page 9). While it provides a solid definition, it is not perfect. It helps to turn to Dylan Horrocks to show some of the chinks in the armor of this definitive manifesto.

While Horrocks provides multiple critiques worth exploration, the one most vital to this discussion is his dislike of McCloud’s term of choice, *comics*, with that pesky *s*. Horrocks challenges the expected definition as Varnum and Gibbons point out, “We also learned from McCloud to use the term ‘comics’ with a singular verb” (xiii). McCloud’s definition mentions that comics should be used “plural in form, used with a singular verb” and in many comics critiques and writings (including this one) that have been released post-McCloud, one will find adherence to that practice. Horrocks wonders why exactly and theorizes that it must be a shortened version of the art of comics (page 2). This is interesting, because the phrase *art of comics* could be why McCloud chooses the plural in from, singular verb approach. However, always using comics in this fashion can cause grammatical heartache.

With the stage set from some of the most respected practitioners’ approaches to comics laid out, I will now turn to scholarly debates about comics: cartoons vs. comics, the problem with single-panel cartoons, proper terminology, and whether there is a need for a definition.

**Comics and Cartoon Explanation**

One of the first definition struggles that arises when discussing comics is the matter of the cartoon. People sometimes call comic strips cartoons, especially when dealing with single-panel gag-strip comics. Children also beg their parents to watch TV cartoons. The point of this section is to
describe the differences and similarities between this terminology. In modern speech, cartooning is more in line with the idea of caricature or using simplified drawing techniques to represent complex ideas. Comics are often cartoons, but comics don’t have to feature cartooning. They can rely on multiple genres and approaches, including photo-realism, photos, and abstraction. Animated movies often feature cartooning techniques so are sometimes referred to as cartoons, but in the same way as comics, animation doesn’t have to rely on cartoons. Cartooning can also be used in illustrations or any other graphical representation that is not related to comics or movies. When ideas or characters are oversimplified, they can be called cartoonish. The problem with cartoons and cartooning is this terminology can be misinterpreted as being used for only simple subjects, but as consumers of graphic novels (such as *Maus*) and serious animated films (such as *Grave of the Fireflies*) as well as literature that uses cartoonish caricatures (such as *Animal Farm*) can attest, simplicity does not equal simple-mindedness.

Although comics consists of cartooning, cartoons don’t have to be comics, though this distinction can be hard to differentiate at times. Douglas Wolk argues that cartooning’s “chief tools are distortion and symbolic abstraction; it usually begins and sometimes ends with contour and outline, and it relies on conventions that imply the progression of time” (120). Wolk discusses cartooning as a form of language and likens it to the discussion of symbols and signs that Scott McCloud discusses in *Understanding Comics* and in *Making Comics* (120). Robert C. Harvey also offers an interesting historical background on cartooning. He mentions that the word cartoon comes from the Italian cartone (or card in English), and was first used in its modern incarnation in the magazine *Punch*. He explains at first the drawings were called pencilings, and “Eventually, it applied the term ‘cartoon’ to any full-page politically satirical drawing . . By the time Americans launched their imitations of *Punch* in the 1800s, ‘cartoon’ was well on its way to being established in the modern sense” (96). Even today the term cartoon seems more often to refer to political graphic/text hybrids.
In this etymological sense, comics and cartoons are synonyms. However, over the past century the terms have evolved to mean separate things.

An audience’s cultural experience can make a difference in a cartoon’s success. Keith Kenney builds on this, stating that a cartoonist first uses “oral, written, pictorial” discourse; second, creates a visual sign to represent an idea; and finally, depends on the audience’s shared cultural experiences with the author for successful interpretation (323). J. Anthony Blair adds that the design format of political cartoons can truly influence the audience. Although Blair is more concerned with argument, he argues that little difference exists between visual and verbal arguments (357). It’s not a large leap applying Blair’s concept toward instructional design through comics mattering.

The public’s perception of cartoons isn’t always positive. Paul Lester doesn’t recognize the subtleties mentioned above and clumps together animation, cartoons, single-frame comics, graffiti, and comics into one category. He argues that most readers would take issues with serious topics being conveyed in the medium (197). While he unconventionally calls comics “cartoons” he argues “It is unfortunate that cartoon messages are discounted by a narrow view of their importance” (200). In this sense, he is correct: discounting a medium’s capacity for seriousness is problematic.

However, the cartooning style can also lead to horrific consequences. David Novitz discusses how caricatures and exaggerated features used in comics can distract readers and harm the ethos of the message. Novitz wonders how silly images with exaggerated characteristics can be taken seriously by an audience (128). Novitz is primarily concerned with how caricatures can lead to propaganda use and racism, citing the hugely “successful” anti-Semitic cartoons used by Nazi Germany (see Comic Art Propoganda: A Graphic History by Fredrick Stomberg and Peter Kuper). But his focus on the negative, while necessary, distracts from the positive uses of comics.

James Hartley discusses the role of comics in instructions, and like Lester, seems to blur definitions. He argues that with proper design, comics can effectively be “used to present a
simplified form of instruction, but there has been little research on their effectiveness in this respect” (86). He argues that multiple studies support the concept of cartoons enhancing motivation but not comprehension (86). It’s difficult to know where Hartley gets the results about illustrations hurting students’ vocabulary understanding but helping children read if “the pictures supplement the information given in the text” (87). Furthermore, Hartley’s and Lester’s word choice of cartoons confuses readers—are they referring to cartoons used in comics, comic strip instructions, or both? While providing useful information on comics and cartooning, they also inadvertently argue for agreed-upon definitions of terms.

In scholarly discussions of cartoons, the consensus seems to be that they are a collective set of images and ideas that readers can easily identify and make meaning from. While caricatures can strip an image to its most basic and important message, it can also lead to horrific profiling. Because of this, cartooning needs to be considered thoroughly before its use in technical communication. While cartooning shares many of the primary goals of technical communication, it’s vital to remember that cartoons can be used in all genres, and comics don’t have to rely on cartoons. In this discussion of cartooning, the idea of single-panel comics came up frequently and they were often referred to as cartoons the most often. Debate among critics rages on whether single-panel cartoons are actually comics. The next section addresses this concern.

**Single-panel Comics**

Scott McCloud’s definition of comics famously excludes single-panel cartoons, which has led to a discussion of what actually constitutes comics and what difference lies between gag cartoons and comic strips. McCloud argues that since sequential art is vital to the definition of comics, and without a sequence, comics don’t exist. McCloud concedes that single-panel cartoons can be classified as comic art, but “they’re no more comics than [a] still of Humphrey Bogart is film” (20 – 21). While Horrocks claims that McCloud “has already apologized for ‘closing the door’ on single-
panel cartoons” (page 4), this doesn’t change his stance on single panels not being comics (in a recent visit to Iowa State University campus McCloud reaffirmed this). This has made identifying political cartoons particularly problematic: some are single panel while others are multi-panel, but all seem to follow similar conventions. But the main separation, at least according to Wolsey, is the content more than the medium, with single-panel cartoons often focusing on politics and power (115). While this may be true for gag cartoons, it’s not untrue of comics either. Definitions can rage on about whether they are the same medium, but for this discussion what matters is that either could be used for the purpose of learning visual literacy.

According to David Carrier these gag cartoons can be included in the definitions of comics and this division made by McCloud need not exist. Carrier explains that when a reader observes a single-panel cartoon, we know something else occurred moments before and will continue after the scene as well, not unlike a photograph. To Carrier, this makes single-panel cartoons sequential and thus fitting inside of McCloud’s definition (107). The idea of looking at a caricature or cartoon and inferring the sequential nature of before and after could solve McCloud’s concern of single-panel cartoons not being sequential. While this definition seems to be applicable to all visuals, Carrier suggests otherwise: “Many representations—still lifes, portraits, some landscapes—do not appear to define temporal sequences” (107). It’s the juxtaposition (the very concept McCloud argues as mandatory for the medium) that makes the stand-alone cartoon work. However, if fine art depicted a sequential story, then it could potentially be considered a comic because the materials of comics don’t really matter (earlier arguments suggesting print media being vital have since been rethought with the onslaught of digital comics). Aaron Meskin suggests a similar concept to the sequential nature of stand-alone panels by claiming that they are usually sequential in appearance (371). This argument is intriguing but may rely too heavily on philosophy for the comics critic to employ.
One of the most theoretically sound arguments for including single-panel cartoons in the definition of comics comes from Robert C. Harvey. He bases his inclusion of the single panel (which he calls a gag cartoon) on the idea that comics are formed by blending visual and verbal content and aren’t as dependent on sequence as McCloud argues. Harvey even claims that the history of cartooning sides with him (75–76). He solidifies this by acknowledging that the single-panel is not included in McCloud’s definition before asserting, “comics consist of pictorial narratives or expositions in which words (often lettered into the picture area within speech balloons) usually contribute to the meaning of the pictures and vice versa” (76). Harvey cements this notion, “the modern gag cartoon is the haiku of cartooning, and no definition of the medium can be complete without embracing it” (96). I agree with Hatfield, and by focusing the definition on blending instead of sequence, more affordances appear. Focusing on literal sequence limits the capacity of the definition of comics and creates unnecessary barriers. When referring to instructions, the comics format is a tool to teach instruction and allowing a broader definition of comics caters to students applying visual literacy in the topic.

On a slightly different note than single-panel cartoons is the discussion of whether books of multiple single-panel cartoons connected by an overarching story (i.e., picture books) are comics. McCloud says the two things are separate but Horrocks disagrees, calling such a view logophobia. He writes, “Given how hostile most cartoonists are to suggestions that comics are illustrated texts, you might think this was a border we would be constantly delineating in the clearest terms” but he admits that most cartoonists (including himself) avoid it (page 5). The border may be nebulous, but it exists. I agree with McCloud that for the majority of picture books the pictures aren’t necessary for the story and even if they are—their intention is not to perform as comics. I don’t think this is due to logophobia either, because the balance of a comic book can rest on words while still relying
on a hybrid of graphics (see *Raven Girl* by Audrey Niffenegger for an example of this hybrid). A picture book is not a comic, but it can be sequential art, according to Eisner’s definition.

Using these addendums, I feel comfortable including single-panel cartoons as comics because they are sequential in nature, even if they’re not explicitly sequential in design. However, picture books are not comics because while sequential in nature, the images aren’t mandatory to the story but serve under Eisner’s definition of illustrations. In an appropriately post-modern autobiography, famed comics artist Eddie Campbell gives an interesting response to the single-panel debate through the representation of his fictional daughter: “So, if he read somebody saying categorically that a comic must have more than one picture or it’s not a comic . . . You have no idea. That would be a big deal. ‘Bloody definers,” he’d say, ‘f*ck ‘em all.’ He reserved the right to draw a comic with only one picture if he felt like it” (21). This might be the best response to the single-panel and picture book debate that exists.

**Comics Terminology**

Benjamin Gibbard, the lyricist and singer for the band Death Cab For Cutie, solves the vocabulary conundrum that haunts visual rhetoric, multimodality, and comics with the lines, “The boundaries of language, I quietly cursed. And all the different names for the same thing” (“Different”). While an emo lyric might seem out of place in an academic discussion, poetry can often solve the dilemmas of hashing out the meanings that are often misunderstood. However, before we can claim such relief, it’s vital to explore the terminology behind comics because they help us understand what writers mean and add a specificity to a topic that, as already demonstrated, can be divisive. Ting Yuan recounts Eisner’s definitions as comics being “The arrangement of pictures or images and words to narrate a story or dramatize an idea”, that “employ[s] a series of repetitive images and recognizable symbols” that when repeated becomes a language (qtd. in Yuan 297). Yuan expands on this by claiming that Eisner’s definition transcends design to include multiple disciplines
just as the “umbrella term” *comics* can include “comic strips, comic books, cartoons, graphic novella, and manga” as well as single-panel cartoons (297). This added line at the end is a nice way of glossing over the problematic definition McCloud gives that excludes single-panel cartoons. But the vocabulary gets more complex.

Part of the reason behind comics’ complex vocabulary stems from the public perception that comics lacks credibility. On a base marketing level, in order to sell books to adults, new terminology needed to be born. Virginia W. Gerde and Spencer Foster point out that this juvenile perception is limited to the United States because in other countries comic book isn’t synonymous with juvenile (246). Hence in 2014, we wrestle with the terminology of graphic novels, comics, comic books, comix, sequential art, and sequential narrative. The current vocabulary choice of graphic novel, sequential art, or both can be accredited to Will Eisner who coined the term sequential art and popularized the term graphic novel (McCloud *Understanding* 5). George Dardess, however, critiques *sequential art* as “overdressing the form”(213). Donald Kunzle suggests using the phrase “pictorial sequence” instead to describe comics (Dardress 6). It’s valuable for professionals and scholars to use the right terminology to describe comics; however, *graphic novel* has become one of the most popular descriptions of comics, which concerns many theorists.

Charles McGrath points out that the name graphic novel is a misnomer because *novel* is used for fiction but graphic novels can be non-fiction, a memoir, or other genres that he doesn’t mention (like instructional, educational, journalism, historical). He oddly adds a comment about them not being graphic in the “sense of being realistic or explicit”(296 – 297). But that’s not what the word means; it’s graphic as in having to do with images. Even odder, he suggests that Scott McCloud prefers the “pretentious” term sequential art, except that McCloud argues for *comics* based on Will Eisner’s suggestion that sequential art is a format that includes comics (297). McGrath offers some insightful names from comics though, such as “comix”, Alan Moore’s “big expensive comic book”,
and Art Spiegelman’s “comic book that needs a bookmark” (297). McGrath sides with using *graphic novel* and claims “the tag has stuck” partially because Spiegelman and Chris Oliveros solidified this with their subsection headings featuring graphic novel/biography, etc. (297). Douglas Wolk seems to agree when he writes, “As a ten-dollar phrase, it implies that the graphic novel is serious in a way that the lowly comic book isn’t”, most people, he adds, say “graphic novels” when trying to make the medium more serious (63). I often refer to the comics as graphic novels as well for this very reason because when I tried saying *comics* people treated it as if I was being politically incorrect (“don’t we call *those* graphic novels now?”).

For Jacquelyn McTaggart comics is a blanket term that “describes any *format* that uses a combination of frames, words, and pictures to convey meaning and tell a story” and adds the important disclaimer: “*all graphic novels are comic books, but not all comic books are graphic novels*” (31). Her distinctions hold up for the most part. Comic books aren’t necessarily synonyms with graphic novels even when we move aside discussion about their seriousness. Ben Schwartz’ account coincides with McTaggart when he recounts a time he overheard some teenagers claim that the difference between comics and graphic novels is that comics are funny and graphic novels aren’t. He writes, “I wish I knew a term that covered cartoon fiction, graphic non-fiction, pictro-novellas, tone poetry, funnies, autobiographical comics, or doodles with words. Funny or not, I just call them comics” (10). Graphic novels, serials, comics, or comic books all seem to be different names for the same thing.

Comic books that are “serious” are difficult to name. Schwartz calls them “literary, or ‘lit’ comics” (10). The moniker “lit comics” does the job of setting apart serious topic matters but creates problems because the title indicates judgment, reaffirming the bias that literature is better than genre-based fiction. It also excludes the non-fiction comics I use in my study. I often call these *scholarship comics*, but that’s also problematic. Charles McGrath calls them “the comic book with a brain” (297). If that terminology weren’t so insulting, it would be a useful name.
So what should any of them be called if there are problems with all of the terms? Wolk points out that comic book itself is “a terrible name; ‘comic’ implies that they’re funny, and ‘book’ suggests that they’re not pamphlets and come in a single, concrete form”, but all are less problematic than graphic novel (62). Wolk points out the issues with these types of comics having novel attached to them. Are books like Understanding Comics or The 9/11 Graphic Commission Report novels? Wolk writes, . . . it’s odd to call, say, books of reportage in cartoon form by Joe Sacco and Ted Rall ‘novels,’ or to suggest that memoirs by Alison Bechdel and Harvey Pekar are fictional, or that a collection of short pieces by Ellen Forney or C. Tyler is actually an extended, unified story. Given how long it takes to draw comics, the idea that the ‘novel’ is the default form for the ones with high aspiration is also pernicious, because it suggests that shorter stories can’t be serious. (62)

For the most part, any of the above titles will work. Even though I’ve pointed out the problems with McCloud’s interpretation of sequential art being synonymous with comics instead of comics being a form of sequential art, I believe the two can be used interchangeably. Sure, not all long-form comics are novels, but graphic novel is the popular term, is mostly understood by a layman, and is not a pejorative. Because of this, I refer to the medium as comics or sequential art, the books as graphic novels or comic books, and the varying digital or print forms as either comic strips, a comic, or comics.

**Comics Definitions in Academia**

I’ve spent a lot of time discussing cartoons vs. comics, practitioner’s definitions, terminology, and genre/medium; but before finishing this discussion it’s useful to turn back academics’ attempts to broadly define comics. Alphons Silbermann contends that comics depend on the interplay between picture and text that “tells a story both on different levels of the pictures and different levels of time” (21). Talon Durwin deconstructs the term comic book saying: “The first word implies the visual world while the latter calls to mind the literary world” and adds that “Separately,
the two words describe totally different things, but together the meaning is clear: words and pictures must work in tandem to tell a story” (38). Most agree that comics do need both words and images, and Talon’s claim that the name defines itself has merit. Some definitions, like elements of Eisner’s, focus on a definition based in production elements. David Carrier claims that “the speech balloon, the closely linked narrative, and the book-size scale” are mandatory elements of comics (qtd. in Meskin 370). David Kunzle defines a comic strip as “a sequence of separate images’ with ‘a preponderance of image over text’ that appears (and was originally intended to appear) in ‘a mass medium’ and tells ‘a story which is both moral and topical’” (369). These definitions might be more akin to the sequential nature of comics, as suggested by McCloud, or the blending nature, as suggested by Harvey.

One element of comics that might be more vital than McCloud admits is the words, even if the definition of what constitutes words can be liberal. While Harvey includes the single-panel cartoons that McCloud excludes, he partially excludes McCloud’s inclusion of wordless comics—or at least he emphasizes the value of the word more than McCloud does. Harvey suggests that words are as “integral” as pictures for comics; he also points out that McCloud’s definition is too broad and should be considered “a springboard to discussion”, which was actually its purpose (75). Harvey’s doesn’t entirely discount pantomime comics in the definition, but says they are “exceptional” because “Usually, the interdependence of words and pictures is vital (if not essential) to comics . . .” (76). Harvey stresses the blending of visual and verbal, and isn’t entirely incorrect when he questions the usefulness of pantomime comics. Perhaps what he needs is Charles Hatfields’s more liberal definition of words. Hatfield argues that comics need “diagrammatic symbols,” and balloons can be filled with pictograms that “may be drawn in a different style than the pictures used to establish the diegesis: typically, they are less particular, or more generic” (134). This concept contradicts the notion that typically is found in comics, that “comics depend on a dialectic
between what is easily understood and what is less easily understood; pictures are open, easy, and solicitous, while words are coded, abstract, and remote” (133). Hatfield says the reality is that “in comics word and image approach each other: words can be visually inflected, reading as pictures, while pictures can become as abstract and symbolic as words” (133). Both argue toward a focus on blending the visual and verbal more so than the sequential nature of comics.

Thierry Groensteen takes a typical approach to defining comics by calling previous attempts incomplete and “unacceptable” because they often rely on defining physical printing characteristics or skewed views of comics’ origin (125). Groensteen does give Pierre Couperie credit for coming close to a solid definition that he wrote in 1972:

Comics would be a story (but it is not necessarily a story . . .) constituted by handmade images from one or several artists (it must eliminate cinema and the photo-novel), fixed images (in difference from animation), multiple (contrary to the cartoon), and juxtaposed (in difference from illustration and engraved novels . . .).

(qtd. in Groensteen 125 – 126)

Couperie admits that this definition also works with Trajan’s Column and the Bayeux Tapestry, so it has its problems (126). Couperie excludes the framing, balloon use, and distribution methods as viable defining criteria, which many, including Will Eisner, argue for (126). Groensteen’s claims are valid, but also a bit overzealous as I will show next.

Definitions of comics might be too hard to accomplish or just too exclusive. Groensteen’s argument is called “The Impossible Definition” and this sentiment can be felt in most writers’ attempts to define the medium. Groensteen definition, while good, sounds like an overcomplicated hybrid of what Eisner and McCloud already claimed. He bases comics’ definition on what he labels as iconic solidarity. He defines this as, “interdependent images that, participating in a series, present the double characteristic of being separated” (128). Groensteen mentions that the amount of
unquantifiable art in comics, like literature, make a static definition difficult (i.e., words and sentences strung together do not make literature) (129). While impressive, I’m not sure this adds much more to the conversation aside from elevated, theoretical language. Perhaps the definition is impossible and the endeavor should be abandoned, as some suggest.

**Moving Beyond Comics Definitions**

Some comics criticism and scholarship have shifted toward the notion of abandoning a definition altogether. Joseph Witek points out that most comics definitions attempt to isolate a series of criteria that create the unarguable “essence of ‘comicsness’” (149). But, like other attempts at defining entire mediums, it gets lost in finding the first comic and how to distinguish it from other verbal and visual art forms (149). This is the same problem McCloud, Groensteen, and Couperie grapple with. Witek suggests that definers engage in a set of rhetorical gymnastics to move around the historical concerns and definition strategies but suggests the “ineluctable core of comics form remains a will-o-the-wisp” (149). Also, evaluative criteria seep in, attempting to sort comics into being either “indispensable” or trash; but the problem remains that formal conventions in any medium come and go (149). This coincides with Miller’s assertion that forms “change, evolve, and decay” over time (“Genre” 164). Witek’s article focuses on two mostly obsolete functions in modern comics that used to be commonplace: panel numbering and directional arrows (149). Witek argues that these obsolete reading devices used to be key elements in comics definitions but now have no bearing on the medium whatsoever because they’ve disappeared from the medium (155). Problems with evaluation and changing expectations in the medium are commonplace and complicate the definition.

A blunter reaction to the definition debate is akin to the infamous definition of pornography that Justice Potter offered (the famous “I know it when I see it”): comics are comics. Douglas Wolk agrees with this notion because, as he puts it, if “you have not been spending the last century
trapped inside a magic lantern, you already pretty much know what [comics] are, and ‘pretty much’ is good enough” (17). He suggests that if a definer creates boundaries, the medium finds a way to bypass the imposed boundaries (17). While slightly comical and not untrue, it’s also a silly argument in many ways: many things are recognizable to most people, but that doesn’t mean a definition isn’t needed.

One of the more thought-provoking responses to the anti-definition debate stems from the comics definition being ahistorical, which means that the definition also applies to older, more ancient art forms that are decidedly not comics. While McCloud addresses these older versions of sequential art as precursors to comics, Aaron Meskin views them as a definition damnation. He refers to Hayman and Pratt’s definition of “x is a comic if x is a sequence of discrete, juxtaposed pictures that comprise a narrative, either in their own right or when combined with text” (qtd. in Meskin 370). Meskin claims this definition allows a wide range of comics to be considered but does not “take into account the historical contexts in which works of art are produced” (371, 374). But he offers some balm for those seeking to define comics by claiming that the need stems from over 150 years of a medium being taken for granted (374). He concedes that there is value in defining comics but doing so isn’t necessary because comics’ strengths should speak for themselves (375). While noble, such a notion isn’t always practical, as this section has shown.

Defining comics warrants ongoing discussion and debate. McCloud’s famous definition functions more of a call for further discussion than a definitive debate. Because of this, the definition can be muddied by various criteria and arguments, but those critiques don’t ruin the quest of definition. For example, Michael Brooks points out in 13 Things That Don’t Make Sense that any definition attempt for the concept of “life” and “living things” can always be thwarted by an outsider example. Every criterion for life can usually be found in some non-living thing. The same problem happens in language grammars and classifications. This is often my critique of exhaustive
attempts to define the medium of comics. There will be exceptions to any definition—but that doesn’t mean we should give up.

**My Comics Definition**

Defining comics is rife with historical complications and wording nuances that place limits on a creative art form; while an exact, universal definition may never happen, by combining the theories and ideas stated here, we can create a prototype. Comics are a form of sequential art that feature juxtaposed images, blended visuals, verbal elements, and either sequenced stories of a literal or implied nature. These elements amalgamate to create a cohesive storyline that builds on previous action, be it blended, implied, or literal.

While comics feature cartoon and caricature, they aren’t synonyms and comics don’t require cartoons to exist. The same can be said about print medium, panels, speech balloons, or any other physical characteristic definition. While caricature and cartoon are common in the medium, their inclusion doesn’t make or break the definition of comics. However, they often work harmoniously to use gestalt principles in visual matters.

Not all comics are graphic novels, but all graphic novels are comics—and while the phrase is a misnomer, it isn’t egregious and can be used as a synonym for long-form comics. The labeling of comic strips, gag panels, graphic novels, and comics aren’t important for the definition—likewise, physical aspects (such as speech bubbles, panels, etc.) are also unimportant because these labels and distinctions change and reinvent themselves. They are valuable for clarification though.

Sequential art includes many formats (such as gothic art tapestries, ancient art, and even some picture books), but comics are the most effective inclusion of sequence and blend. They are also currently the most popular form of sequential art. Because of this, the phrase can be used as a synonym so long as one understands that comics aren’t the only form of sequential art. Comics can
be a collective noun used with a singular verb, but doesn’t have to be—otherwise we are left with the concern of having a pile of comic ses.

**Comics As Ancient Rhetoric**

Since its inception, rhetoric has sought to define persuasion and how language motivates people to act. As time passed the written word was included in the discussion, and in more recent years the addition of visuals has become necessary (as the next chapter will discuss). Because I’m analyzing comics as a form of rhetoric, it’s helpful to look at how comics fits within traditional rhetoric concepts. Alec Hosterman argues for comics as a form of visual literacy as well. He theorizes that the visual cues used in comics to represent speech and action are only understood by the reader if he/she uses closure (from gestalt theory) to combine the disparate elements of comics into a visual whole (21 – 22). Hosterman reasons that comics employ symbols that represent the spoken word through dialog and visuals and teaches visual grammar to encourage visual literacy (24 – 25). Relying particularly on single-panel cartoons, Hosterman suggests comics are especially able to use visual kairos to create exigency moments in the public, making it a powerful piece of visual rhetoric (27). All of these observations are powerful arguments in how comics teaches rhetoric. One of the strongest lies in the discussion of comics as enthymemes, which he Hosterman also discusses (23 – 24). Before explaining this concept, a brief discussion about gutters in comics is necessary.

Simply put the gutter in comics is the “space between the panels” (Morrison, Bryan, and Chilcoat 761). Scott McCloud dedicates an entire chapter to the gutter in his book *Understanding Comics*, and many critics and scholars have commented on gutters as well. While I do not know if gutters were seriously discussed before McCloud’s work, they definitely have been since and even students unconsciously brought up their role in some responses. In order to address the gutter issue, I will summarize McCloud’s analysis of the topic, then I will follow it up with other viewpoints, add student comments, and my own commentary.
Gutters as Enthymemes

To introduce the topic of gutters, Scott McCloud discusses the idea of closure, which he defines as “as observing the parts but perceiving the whole” as in seeing a building that the reader has never entered before but assumes has an inside or realizing that someone off screen in a photograph was actually there when the photo was taken (63). McCloud argues that closure “is the agent of change, time and motion” and exists in all art but comics “uses closure like no other” medium because the “the audience is a willing and a conscious collaborator” (65). The closure elements are played out primarily in the gutter because “in the limbo of the gutter, human imagination takes two separate images and transforms them into a single idea.” (66, panel 4). McCloud relies on closure again arguing that we fill in the blanks between the panels because due to previous experience we reason something must be there (67). McCloud says that closure is voluntarily achieved by the “silent accomplice”, aka the reader (68). He uses the example of a murder taking place off screen and between panels, which he argues means “all of you participated in the murder” (68.6). McCloud adds “between panels, none of our senses are required at all. Which is why all of our senses are engaged” (89.10, 11). He concludes that “What happens between these panels is a kind of magic only comics can create” (92.2, 3, 4). Critics and scholars have written similar testimonies to the gutter, especially of gutter’s function of mimicking time and space.

Douglass Wolk argues along the same lines of McCloud about the gutter’s role in showing what happened between actions. He suggests that a reader moves through space and time at their own speed through the panels but in the gutter “readers get to fill in the lapse of time represented by the blankness of the gutter” (130 – 131). He argues that reading comics is enjoyable because the reader actively participates in the reading by filling in blanks (132). This reads very similarly to McCloud’s own assertion that “The reader’s deliberate, voluntary closure is comics’ primary means of simulating time and motion” (69).
Damien Duffy makes a similar argument based on theory, particularly Foucault notions. Like Wolk and McCloud, Duffy agrees that the reader moves through space and time in the gutter but draws on linguist Neil Cohn’s argument that we read panels in a fashion that contrasts the “linear cognition through which we perceive real time” (4–5). Thus, the illusion of time passing between panels is a caricature of actual passing time (5). What stands out in Duffy’s argument is the notion of the comics literally symbolizing all aspects through caricature, even the notion of time passage.

Dale Jacobs relates the reading of gutters to multimodality, which especially dovetails with my argument. He defines gutters in a similar fashion to Duffy, Wolk, and McCloud but adds that gutters can be conceptual spaces in addition to physical ones (21). He relates comics back to the New London Group’s definition of multimodality and how it forces readers to “move beyond a focus on strictly word-based literacy” (Jacobs 21). Jacobs is one of the few scholars who have made the connection of comics to the goals of the New London Group.

A powerful anecdotal approach to the efficacy of gutters comes from comics critic Durwin S. Talon. Talon’s first foray into comics as a child with a Batman comic book. Later in life he went on a quest to locate the same Batman comic he had read as a child. When he found it, he was surprised to find his memory had turned the book into a motion picture by filling in the gaps with movement. His memory had converted the static text into a fluid memory (12). While Durwin doesn’t specifically mention the gutters, his description of his memory filling in the gaps supports the theory of gutters and closure.

In my study, students also tapped into the power of gutters, although few mentioned it specifically. Multiple student comments referenced the strange narrative power of comics that students felt. It could be argued that part of this occurred because of gutters. One student writes, “The comics helped me feel like I was part of the process and not just being told what to do.” Another writes that “the comics provided intermediate information that may not have been
captured by camera” in step-by-step instructions. While not explicitly stated, part of the process this student experienced and the action that existed for the student who argues for comics’ power over cameras could be contributed to the gutter. One rhetorical suggestion for why gutters might be successful is their similarity to enthymemes.

Aristotle points out that all things are proven through either syllogisms or inductions. Because an enthymeme is a syllogism and all proof is accomplished through enthymemes or examples (Rhetoric 1356b). Showing that comics are enthymemes can play an important role in establishing them as a form of visual rhetoric. James Jansinski’s definition of an enthymeme which relies on Bitzer and Conley, describes an enthymeme as when a rhetor argues for situation A with outcome C and the audience fills in the B in order to make the syllogism complete (207). Jansinski gives an example of this with “I do good work [A], so I deserve a raise [C]” with [B] being good work equals higher pay (207). In comics, nearly every action, dialog, and story takes place from panel to panel with the audience engaging in enthymemes to fill in the blanks. If panel 1 has a character looking at the river [syllogism premise A] from a perch, and panel 2 has the person splashing in the water [syllogism premise C], then during the gutter the character must have leapt from the perch and fallen toward the water [syllogism premise B]. Comics relies on this rhetorical premise in nearly every story, with the reader filling in the gaps and therefore tapping into the syllogistic foundation of a powerful argument.

Whether these rhetorical moves make the reader more implicit in the reading is debatable. The extent to which the enthymeme power of gutters causes better understanding is an interesting question and could use further exploration. However, these ties into enthymemes could mean the ancient rhetorical move that naturally occurs in every moment of comics engages the reader in meaning-making that perhaps no other medium achieves as effectively.
Comics as Genre

Recently I was asked by a student writing an article for university publication my thoughts on comics and movies and, as I suspected when agreeing to the interview, the author was using comics as a synonym for superheroes. This misunderstanding reigns in any discussion of comics and is constantly explained by practitioners, critics, and scholars alike. The concept is simple at its core: comics aren’t a genre—they’re a medium. Douglas Wolk fights the genre of comics misconception in his chapter-long definition of comics: “comics are not a genre; they’re a medium. Westerns, Regency romances, film noir: those are genres—kinds of stories with specific categories of subjects and conventions for their content and presentation” (11). He argues that because a few monetarily successful genres dominate the movie industry (i.e., superheroes or comedy) the general public perceives said genre as representative of the whole medium; so if the medium covers something “important” it must have been something other than comics (e.g., Maus, American Born Chinese) (12). Wolk’s responses are a bit strong, but his point is valid.

Theory and discussion aside, probably one of the best proofs that comics is not a genre comes from Matt Madden’s 99 Ways to Tell a Story, which Wolk praises. The concept stems from Raymon Queneau’s Exercises in Style, “in which he spun ninety-nine variations out of a basic, two-part text relating two chance encounters with a mildly irritating character during the course of a day” (1). Madden does just that by creating 99 different genres to a very mundane story: the narrator gets up from drawing a comic, answers his wife’s questions of what time it is, heads to the fridge, and announces, “what the hell was I looking for anyway.” One particular adaptation of the story, entitled “Welcome to ‘Exercises In Style,’” states his project’s purpose was to show “the almost limitless potential of the medium” (23). This exercise in genre, or sub-genre, works nicely in demonstrating the popular definition of genre vs. medium. Examples showcasing genre vs. medium are useful, but for a more theoretical and clear approach, it’s useful to turn to rhetorical genre theory.
Carolyn Miller’s genre theory helped open the conversation about genre discussion in the classroom. One of Miller’s five main implications for something to become a genre in rhetorical studies relates to the comics-as-medium conversation particularly. Miller argues that genre and form (i.e., medium) aren’t the same because form is used as a “more general term used at all levels of hierarchy” and “genre is a form at one particular level that is a fusion of lower-level forms” (“Genre” 164). While the argument could be made that studying comics inside of technical communication is a genre of technical communication according to Miller’s genre theory, the comics themselves are not a genre because they are a general form that can be adapted to many different purposes, situations, and audiences. However, using Miller’s definition, if a technical communication instructor were to use comics for a section of teaching various technical communication approaches, then comics could be labeled as a genre.

Comics are a medium more so than a genre in that they are a format capable of showcasing multiple genres and sub-genres. Yet, an instructor could teach comics in literature or technical communication as a genre along with novel, drama, and poetry in literature or technical descriptions, instructions, and proposals in professional writing.

Comics Studies

To see the amount of comics analysis that takes place in peer-reviewed scholarship, all one has to do is peruse the *Journal of Popular Culture* in any given year, and the reader will find ample examples. However, finding research on classroom studies or comics design becomes a bit more difficult. Comics as scholarship (the study of comics for academic purposes, be it pedagogical or research-based) is also extremely varied. It’s approached from an art critique perspective, a historical perspective, a psychological/sociological perspective, a literature analysis perspective, a teaching material/pedagogical perspective, a rhetorical and analytical perspective (see Magnussen and
Christiansen), an international and culture studies perspective (see Silbermann and Dyroff). It’s important to understand that comics analysis encompasses many different fields and approaches.

Comics also has a long history of being used in the classroom. While there is little research done on designing comics for instructional purposes, there is research on analyzing comics and using comics for general learning that spans multiple disciplines. To understand these wide-ranging uses, it’s vital to look at a sampling. This section will explore various arguments found in comics scholarship before briefly summarizing how comics are approached in a handful of academic disciplines. First, I will look at those asking for a call for comics’ legitimacy. Next, I will analyze some pedagogical calls for teaching comics analysis and production. Then I will look at reading comics and the argument for comics being a gateway to further literacy. Finally, I will look at how comics studies is researched in various disciplines.

**Advocating Comics**

One theme that frequents comics scholarship is a call for the medium to be taken more seriously. Scott McCloud and Will Eisner fight for this in nearly all of their comics creations. An introduction to comics critique can be found in *Panel Discussions* edited by Durwin S. Talon. Talon, a professor at Indiana University and Savannah College of Art, analyzes famous comics artists and creates chapters that merge rhetorical analysis with descriptions and tips from the authors themselves. One author, designer Paul Rand, argues that not only are comics a form of art, but they could be the hardest art form to conquer (196). Throughout the book the authors disprove the notion that comic art is a lesser art form “just for the kids” (196). Jeer Heer and Kent Worcester discuss the emerging academic interest as a legitimate art form. They write that for over twenty years, the previously marginal research of comics has become more mainstream as its respectability grows (xi). This theme is echoed throughout other branches of comics scholarship sympathetic to comics. Charles McGrath uses a familiar comparison of novels eclipsing poetry and how comics
could eclipse novels someday, the point being that most outside and/or new mediums are regarded with initial suspicion (294).

While serious analyses of comics have occurred for over seventy-plus years, comics have enjoyed a higher level of attention, legitimacy, and scholarship in the past twenty-five years, as McGrath argues (294 – 295). One can look to textbooks that feature comics (Convergences, Understanding Rhetoric), theory books that focus on comics (The Ages of Superman, Comics and Visual Culture, Graphic Subjects), comics journals (Journal of Graphic Novels and Comics, International Journal of Comic Art), and conferences focused on comics (Popular Culture Association). Yet as Rolf T. Wigand observes, most of the scholarship about comics is “spotty”, dated, primarily anecdotal, and lacking sophisticated social science research (30, 56). My study attempts to be more sophisticated by relying on progymnasmata and an empirical study. Even though a progymnasmata approach would base comics in rhetoric rather than science, a basis in ancient scholarship would be a large step toward legitimization. However, scholarship exists that explores pedagogical approaches to teaching comics production and analysis and I will briefly cover it next.

George Dudress fights the bias against comics as from a pedagogical approach to comics studies. After discussing various prominent comics that could be used to benefit students, he writes that high school librarians are starting to vouch for the modern, high-quality comic books as a substitute for the traditional textbook (217). Dudress discusses the emerging evidence of visual learning becoming more vital to learning (217). While Dudress’ research is interesting—especially his claim that comics can help all levels of learners—it has one of the problems shared by much comics research for higher education pedagogies: it’s aimed at high school students. That said, like Dudress’ work, it is still useful to observe the comics research being done in secondary and primary education. Virginia W. Gerde and Spencer Foster argue for using comics in the classroom and argue for its
legitimacy in teaching business topics (245). To them, comics are legitimate without a need for justification.

Moving beyond reading, some scholars encouraging designing comics, similar to my study. Timothy G. Morrison, Gregory Bryan, and George W. Chilcoat argue for students to create comics in the classroom on a high school and middle school level (759). The reason for this is students “engage in great literacy exploration” (760). Morrison, Bryan, and Chilcoat encourage design, composition, and creation whereas most scholars do not. Even though their research isn’t designated for higher education, their research is a helpful voice in the discussion. However, Morrison, Bryan, and Chilcoat seem to espouse the odd assumption that comics creation is best suited to biographical and historical settings. It’s true that many serious comics are historical and/or biographical (e.g., *Fun Home: A Family Tragicomic*, *The Cartoon History of the Modern World Part 1: From Columbus to the U.S. Constitution*, *Curses*, *Anne Frank: The Anne Frank House Authorized Graphic Biography*, *Students for a Democratic Society: A Graphic History*, *Persopolis: The Story of a Childhood*, *Maus*, *American Widow*, *A People’s History of American Empire: A Graphic Adaptation*). They are arguing comics as expository composition, where they include biographical and historical subjects as their examples (760); however, expository composition could include any genre used in rhetorical and composition classrooms, so this exclusion of other genres is baffling.

A more common theme that appears in this type of research is that comics is a gateway to more important reading, which while interesting is problematic. Morrison, Bryan, and Chilcoat encourage this old-fashioned stereotype that comics are just gateways to “real” literature. They write that while designing comics books encourages “literacy exploration” it’s merely “a means to an end” (768). Perhaps they use this wording due to stringent standardization goals placed on secondary education or limits in scholarship because they end their essay on the progressive notion that students learn more from the comics assignment than by traditional methods (769). Dale Jacobs
provides examples of scholars that mirror the idea of comics being a gateway (such as Gene Yang, Fredic Wertham, and Haugaard and Koenke), and suggest that “the key ideas remains that the visual is subservient to the written” which Jacobs disagrees with (20). He argues, “in the development of children’s and adolescent’s literacies, reading comics has almost always been seen as a debased form of word-based literacy, albeit an important intermediate step to more advanced forms of textual literacy, rather than as a complex form of multimodal literacy” (20). Jacobs and I disagree that this is the case with comics. Comics can be a gateway, but it can also serve as a mode that promotes visual literacy on their own.

Some scholars also point out comics’ capacity to be a multimodal teaching tool that’s similar to my approach. Some of these, like Jacobs and Brooks, go more into detail on this and I’ll discuss them later. Ting Yuan address literacy and multimodality in students’ approaches to the mode and media of comics. He may be addressing 2nd-grade students, but many of his observations are applicable such as the assertion that instead of isolating children who read comics, teachers should embrace it to teach critical thinking techniques among other multimodal practices (246). Yuan suggests a method of teaching students how to design and read comics through a step-by-step practice that includes having students learn the comics, then learn the technology to create it, and if there is no technology students can simply draw them by hand (301). While not parallel, this approach echoes the progymnasmata approach I took to teach my students.

**Comics Across the Curriculum**

To address the vast scholarship fields that discuss comics, it’s helpful to summarize some of the approaches from varying academics. This list is not exhaustive and it doesn’t claim to cover all scholarship about comics, but is meant to be a sampler of what is being discussed—especially in how it relates to my study. This list does not include comics created in the subject areas, as this will be mentioned in a later chapter. If I’ve already cited a source earlier, it will merely be mentioned. I
also have not included any area with literature or rhetorical analysis because these are far too numerous to catalog and they don’t pertain to my branch of research.

This section is organized alphabetically by discipline and covers art and art history, biology, business, education, history, library sciences, literary studies, physics, sociology, verbal-visual in writing studies,

**Art and Art History**

Many theorists in art history discuss comics. Damien Duffy’s “Learning from Comics on the Wall: Sequential Art Narrative Design in Museology and Multimodal Education” stands out because it is presented and designed as a comic book but published in a journal. His thesis mirrors the formatting of sequential art such as gutters, panels, and design to model for museum displays of art. Duffy uses comics as a metaphor for setting up art in museums. As far as comics go, it’s not expertly crafted—but it achieves the goal and is readable, visual, and textual. He also discusses comics’ multimodal sensibilities (9). Books like *Reading Comics* and *Visual Literacy* are based in art history and design. An introduction to an artistic approach to comics scholarship can be found in *Panel Discussions* edited by Durwin S. Talon. Talon, a professor at Indiana University and Savannah College of Art, analyses famous artists and creates chapters that merge rhetorical analysis with descriptions and tips from the authors themselves.

Some of these have been mentioned, but a few books combine multiple approaches to comics. Douglas Wolk, a comics critic, approaches comics from an analytical and critical prospective. He begins his book *Reading Comics* by claiming that within ten years, the legitimization of comics will be achieved (16). He goes on to take a rhetorical view by claiming it’s necessary to understand the “reader’s side of the comics experience” to make it become accepted (17). Wolk acknowledges that other sources feature comics, though he claims his as one of the first audience-approach critiques (17). Wolk is correct in citing the growing number of resource material for those
interested in studying comics. In the introduction to their work *A Comics Studies Reader*, Jeet Heer and Kent Worchester discuss the growing amount of resources for those interested in comics to study (XI). They cite numerous comic biographies, scholarly conferences (like the PCA), journals focused on comics, comics scholarship, and an increasingly interested audience as evidence that comics as a scholarly study is becoming more widely respected (XI).

Jeff Adams brings an international viewpoint to the topic of art education in middle and high schools and justifies comics’ use in schools as a form of postmodernism and a child’s natural ability to compose with sequential-type art (305, 311). Adams argues that this multimodal approach to teaching comics is the reason that a course like the History of Sequential Art and scholarship exists and graphic art and comics are placed on the margins of art with other “‘minority’ and ‘ethnic’ arts” (305). There are more than sources than these, but this sampling provides some information of what is being addressed.

**Biology**

Jay Hosler, a Biology professor and comics artist, argues that comics’ potential in teaching has been available since its apex of popularity in the 1940s and says that every five years a new call advocating comics appears (43). Hosler has written various science-based comics; his most notable is *Evolution: The Story of Life on Earth*, illustrated by the phenomenal Kevin Cannon and Zander Cannon. His motivation lies in the failures of scientific communication, claiming that scientist “do a great job of throwing data out there but we’re not always as effective as we could be in conveying the wonder that drives us to do what can be quite tedious tasks” (42). His conversion to comics sounds similar to mine as we both seek to look at the most effective way to present data, which isn’t always written text.

Hosler’s research is helpful and can lead to interesting insight in my own empirical research. He tested his hypothesis that a visual story that presented scientific findings would increase students’
comprehension (44). His results were interesting. He did a pre-test and a post-test using his comic book for four courses and found that all of those studied (students with lots of experience or little experience in biology) made significant learning progress, especially those less informed about biology (45 – 46). His universal approach to using comics for all groups to disseminate information provides an impetus to my study.

Business

I already noted Virginia W. Gerde and R. Spencer Foster’s business ethics study in the main body of comics scholarship. I mention it again in this section to show where it lies in the field. This article addresses higher education, presenting a compelling argument about using superhero comics (in particular the X-Men) as textbooks for teaching business ethics lessons. They give many actual examples for teachers to use for various pedagogical subjects (Gerde and Foster).

Education

Much of the foundational research in this study comes from education scholarship since their approach is often similar to the ones taken in my scholarship. The previously mentioned Dudress, Morison, Bryan, and Chilcoat, and Yuan’s scholarship exemplifies educational approaches to comics.

One example is an empirical study by Katherine Hutchinson based in education focusing on comics. In a controlled group, she had 100 high school teachers teach with comic books as part of the curriculum. At the end of the experiment the teachers were overwhelmingly positive about the experience: 79% said it increased student participation and 74% said it helped motivate the students (244). Whether this reflects on students who already were interested to begin with is not clear. Only 42% said it increased interest in reading and all the instructors involved had a favorable view of the process (244). These results may not seem surprising to anyone versed in the comic debate. But it may be surprising that this study was published in 1949, over 60 years ago.
A 1965 study and was done in a third-grade classroom in which Richard C. Wilson and Edward J. Shaffer presented students an instructional piece presented in three different media: a comic strip, a textbook, and a typewritten page. The researchers write that they were “unprepared to learn that third-graders found a typewritten page more appealing than a comic strip as a repository of scientific information”, and the textbook was the most popular decision (82). This might be true, it might be an indication of the era, or it could be in the fact that the researchers claim “care was taken to protect children from the influence of others in making selections” (82). However, at that age, they will probably choose the material that they think they should. Instead, shouldn’t their responses measured results instead of preferences? The authors also mention that one problem could be that students think of comics as a medium meant to entertain rather than educte (82). Problems aside, Wilson and Shaffer offered some interesting insight into preference.

In a similar thread, Gary Wright writes about the visual quality of comics attracting readers of all ages (21). The article argues for using comics in the classroom and provides research from the 60s and 70s to demonstrate this.

Other issues in education include having comics become a college degree and offering biography comics design classes in after-school programs. James Sturm argues that if more scholarship in academia recognized those talented in designing comics, it could build institutions’ functionality and make comics a high art form (Sturm). Michael Bitz writes about an after-school program where students were encouraged to create autobiographical comics about their own lives to promote literacy.

History

The field of history has many available comics. The vast majority of comics published by academic presses or touted by academia are based in historical topics. There are also many articles praising the use of comic books in the history class (see, for example, Chilcoat and Ligon,
Dobrowolski, and Bunce). There are interesting pedagogical arguments being made to encourage students to read comics. However, I'm not familiar with any suggesting comics design in the classroom.

**Library Sciences**

Like history, library science academics have written about using comics to help less traditional readers use the library and experience literature. The scholarship here is meant to encourage libraries to stock graphic novels and comic books for various legitimate reasons (see Crawford and Simmons).

**Literary Studies**

Rocco Versaci’s literature approach is similar to those that use comics as a general gateway to studying. Versaci introduces comics into the literature classroom in addition to traditional novels, drama, and poetry. He does this for three reasons: First, to “increase and diversify the voices that our students experience in the classroom” (“How” 66); second to “invite students to participate meaningfully in a classroom discussion” (“How” 66); and third, and perhaps the crowning purpose of most scholars’ interest in comics in the classroom:

> by using comic books in class and treating them with the seriousness they deserve, teachers enact a powerful lesson for students about the dangers of literary presumption: do not make assumptions based on the appearance or popular conception of certain works and genres too quickly, for such assumptions deny us access to a wonderful world of literary possibilities. (“How” 66)

Although the scholarship of comics and educational comics are used in a far wider variety than literature classes, the sentiment Versaci expresses for “why” they are used is something most can agree on.
**Physics**

Various scholars in physics argue pedagogical reasons to use comic books as reading materials in the classroom. University of Minnesota Professor James Kaklios reports his college physics students prefer comic book problems to the oversimplified, out-of-context textbook problems” (qtd. in Gerde and Foster 247). Toni Feder encourages using superhero comics in freshman physics to encourage students to participate. This approach is championed by others, too, such as James Kakalios.

**Sociology**

Those arguing for comics in sociology focus on pedagogical reading of familiar topics in the field ranging from traditional sociology to the sociology of sports (see Hall and Lucal, Snyder).

**Verbal-Visual in Writing Studies**

This section relates to my research in the most direct way because the verbal-visual approach comes from writing studies. Dale Jacobs argues for comics as verbal-visual theory. Based on Gross’s principles, Jacobs defines a verbal-visual as a theory that visual and verbal input are processed separately by our brains but are linked together by verbal and non-verbal output (150). Jacobs encourages a similar approach to mine, in basing comics in multimodality. However, he doesn’t bridge from reading to designing. Instead he argues for comics being “complex, multimodal” texts that if used in the classroom can lead to students becoming “engaged readers of multimodal texts” (19). Jacobs’ real argument for using comics is very similar to mine: “By complicating our view of comics so that we do not see them as simply an intermediary step to more complex word-based literacy, we can more effectively help students become active creators, rather than passive consumers, of meaning in their interactions with a wide variety of multimodal texts” (24). I agree with his goals, but I’m taking it a step further into the realm of designing multimodal texts that result in visual literacy.
In order to design visual-verbal texts, such as comics, a framework for reading comics needs to be established. Kevin Brooks suggests going beyond the gestalt principles championed by visual rhetoric and the vocabularies suggested by George and Wysocki for designing multimodal texts by building a framework based on Scott McCloud’s approach in *Understanding Comics* (W218). This framework consists of McCloud’s six transition styles and seven word-picture interactions (W222 – W223). I agree that this vocabulary and framework is helpful in reading texts, as Brooks suggests, and it would be interesting to see further research and praxis done with this. However, building a language for reading matters less for my research than simply encouraging the actual design.

**Discipline Conclusion**

This list isn’t comprehensive but does serve as an indicator of how the medium of comics has been incorporated as an analytical and pedagogical tool in multiple disciplines and will likely continue to be analyzed in these and other fields.

**Comics Studies Wrap-up**

The use of comics in academia is widespread, with much of its focus being on legitimizing comics for those unfamiliar with the medium and/or in academia. A sizeable portion remains pedagogical, especially arguing for comics as a reading tool for students who struggle with traditional reading techniques or for those familiar with the medium and visuals. While some merely view comics as a gateway to more traditional texts or for use in primary and secondary schools, I suggest that the same things that make the medium beneficial for those groups applies to upper-level students, and the same viewpoint of comics intended for those who struggle with the traditional text applies to those who struggle with technology in general.

**Conclusion**

Through this literature review, I’ve demonstrated that learning visual rhetoric matters for both academic and professional aspects of technical communication. Comics can be used to teach
visual literacy based on the definitions and research available. One way to approach teaching comics production is through multimodal methods, where the goal is designing products. In this method, comics qualifies for verbal, visual, and potentially other modes of communication. One of these potential methods is through new media and digital literacies. Due to social economic situations, race, age, and gender, access to technology can be limited, resulting in a digital divide. While digital literacy matters, research shows that learning how to engage with technology and software critically is more important than learning how to use a specific kind of software and technology. Because of this, simple modes can be used to teach literacy. Comics can be taught through simple modes (like pen and paper) or complex ones (software and digital design). The definition of comics is complex and spans multiple fields and professions. Exploring the definition of comics opens the conversation for future use of the format. Comics serves as ancient rhetoric in multiple ways including the concept that panels serve as enthymemes. Comics is studied in academia by multiple colleges. While topics relating to comics are varied, the ones that matter to designing comics are based in pedagogy. The majority of scholarship is aimed at analyzing, reading, or accepting comics, which isn’t adequate for a discussion of design. The visual-verbal approach seeks to offer more of a design-centered approach, but is currently limited by vocabulary or autobiographical examples. Therefore, to teach students to design comics, the ancient rhetorical practice of progymnasmata achieves these requirements, which I will discuss in the next chapter.
CHAPTER THREE: METHODOLOGY

In order to see what affordances both designing and studying comics in a technical communication course allows, I have created a method of teaching and creating comics that follows a progymnasmata-centered approach. I carried out this approach in four technical communication courses taught at Iowa State University from 2012 – 2013. The first two-thirds of the semester followed a traditional technical communication course based on Richard Johnson-Sheehan’s textbook *Technical Communication Today*, with assignments like professional correspondence, technical descriptions, instructions, and usability testing. Then I initiated the comics section for the last third of the semester. The students were introduced to a set of comics that guided them towards creating instructional and descriptive comics.

The study culminated in students remediating their already-created instructions first into a script and then a comic strip. The students were given a set of survey questions in a questionnaire approved by the IRB featuring ten open-ended questions that asked what affordances they gained or lost from studying comics and from composing in the comics medium. The study was done in two different technical communication sections in the fall of 2012, one section in spring 2013, and one section in summer 2013.

The purpose of this chapter is to explain the methodology for my empirical classroom study. In order to do this, I will first look into theoretical research that both justifies and explicates my reasoning behind using empirical qualitative research. The section will define different elements of qualitative research (such as questionnaires, coding, theory, etc.) and will begin to establish the methodological foundation for my approach in the classroom. The next section will address the pedagogical theory that informs my classroom study, aside from the visual rhetoric and comics studies I’ve already explored. The first part of this section will look at progymnasmata and then next
will address critical pedagogy. Then I will examine how a combination of the two encompasses the New London Group’s design elements.

**Methodology Theory**

As my literature review and introduction explained, the theory that justifies my research originates from visual rhetoric, multimodality, and comics studies; however, that research was invisible to my students. The visible methodology theory my students saw, while based in visual literacy, was a mixture of the ancient rhetorical practice of progymnasmata and the modern composition movement of critical pedagogy. At times blending these two approaches was difficult because elements of these theories contradict each other. Progymnasmata relies on using authority and step-by-step teaching strategies while critical pedagogy uses a mixture of power reflection and democracy in the classroom. These seem contradictory, and in many ways they are—however, in my approach they also share common goals. My teaching strategy borrowed from the ancient format of progymnasmata mixed with modern democratic elements and critical pedagogy, all of which informed the themes and topics covered in the comics students analyzed. In many ways my pedagogy was a modern progymnasmata approach, and the materials were critical in nature so students had to reconsider their world while learning a practical design approach.

The next section first explains the goals and methods of progymnasmata, then covers critical pedagogy, and finally looks at ways to justify using both methods by multimodal theory. The first section will give a historical account of progymnasmata, moving its Greek origins, then to Quintilian’s writings, and finally to modern scholars’ interpretations of the teaching method. The next section will look at critical pedagogy by defining it, acknowledging its critiques, justifying those critiques, and finally analyzing why I’m using it in this study. The final section will look into political arguments condemning comics and how to overcome them as well as look at the New London
Group’s design elements and how a combination of progymnasmata and critical pedagogy can meet their standards.

**Progymnasmata**

Various methods could be used to teach comics as a multimodal process in order to achieve visual literacy, but in order to tether my approach to the ethos of ancient rhetoric, I used progymnasmata. While ancient, progymnasmata still resonates thousands of years later. Sharon Crowley and Debra Hawhee explain that like modern composition theorists, ancient rhetoricians emphasized practice rather than in the finished product (28). Focusing on the modes (instead of merely the media), as multimodality does, is a fitting method for teaching comics production. The similarity between process theory is fascinating too. In order to argue for my incorporation of progymnasmata, I first must describe how it works as a pedagogical method.

The term progymnasmata first appears in *Rhetoric to Alexander*, which was written around the same time as *Rhetoric* (Crowley and Hawhee 31). Although the ideas are presented by Quintilian, there are four other ancient sources that describe the process. The first is from Aelius Theon, “a sophist who lived in Egyptian Alexandria during the first century CE. Hermogenes of Tarsus wrote another, probably during the second century CE…” (Crowley and Hawhee 32). The next one was made by Nicolaus in the fifth century CE: “the most complete list of elementary exercises we possess is the one put together by Aphthonius, who taught rhetoric in Antioch around the fifth century CE” (Crowley and Hawhee 32). Frank D’Angelo spent years researching the Greek’s educational techniques, including the *pro-gymnasmata* elements, and offers fascinating insights into how the work taught students rhetorical skills (see *The Rhetoric of Ekphrasis* for example). Despite D’Angelo’s (and others’) restoration of the Greek educational approaches, Aubrey Gwynn believes that Quintilian’s surviving work about progymnasmata is the best resource available (202 – 203). For this reason, I focus heavily on Quintilian.
In Book II of *Oratory*, Quintilian lays out what encompasses the progymnasmata. Patricia Bizzell and Bruce Herzberg indicate that Quintilian gave much-needed descriptions of the more advanced speaking and writing laws (362). However, James J. Murphy points out that Quintilian was “less than thorough” when describing the progymnasmata because it was common practice to his Roman audience and didn’t need explanation; it wouldn’t be fully understood by modern scholars if it weren’t for contemporary scholars’ expanded explanations (53 – 54). One of these was Hermogenes of Tarsus, whose definitions of progymnasmata would become the basis of Aphthonius (56). Bizzell and Herzberg state that Agricola in the fifteenth century translated Aphthonius’ *Progymnasmata* into Latin, “thereby creating one of the most widely used Renaissance rhetoric schoolbooks, a set of exercises based on hypothetical cases” (566). This background sets up a foundation to build a definition on.

Murphy explains that the progymnasmata are a “set of graded composition exercises . . . [whose] name comes from the function of the exercises: if the highest form of school training are the declamations or fictitious speeches (*gymnasmata* in Greek), then that which prepares for them is Pre-Declamation (*pro-gymnasmata*)” (54). Michael Mendelson also emphasizes the pro, or pre, of the gymnasmata by defining them as “literally, ‘pre-training’ activities, preliminary in the sense that they lead to the full-dress arguments of declamation and, beyond that, to the kinds of deliberative, forensic, and epideictic speech” (187). Stanley Bonner explains that the activities were “preliminary in the sense that they were designed to lead up to the full-scale mock-deliberative and mock-legal speeches” (250). The progymnasmata was a step-by-step process for Roman students to learn valuable oratory and rhetorical skills one step at a time by using materials they were familiar with.

The order of the exercises is important, as Mendelson points out, because each exercise builds on the previous one (188). Quintillian himself stresses the importance of order, “to consider them in the order contrary to that in which I have named them, no man can surely doubt whether
the last, which is wholly employed about words, concerns the orator, if it be his business to know
the exact significations of terms . . .” (XII.2.10, 419). Just like in a step-by-step instructional process,
steps can’t be skipped because each new section builds on the previous, and to do so would cause
confusion.

The progymnasmata order of Rome consisted of the following categories: fables, fictitious
tales, chreia (interpretation of maxims), narration (or refutation and confirmation) which involved
“questions of fact (did it or did it not take place)”, commonplaces and econmia (“epideictic exercises
in the praise of virtue and vice”), comparisons and impersonations, the thesis, and finally discussion
of laws (Mendelson 188-190). Mendelson goes on to explain that “it is a considerable leap from
retelling fables to theoretical reasoning about complex points of law” (191). From an outsider’s
perspective the same could be said about the leap from comics to technical comics. My teaching
strategy followed this path of building on previous exercises to teach the next. A step-by-step
process was the key, according to ancient rhetoricians, for students to learn complex ideas.

The end goal was to produce rhetoricians and “good” members of society. Aelius Theon
wrote about this as well: “It is quite evident that these exercises are altogether beneficial to those
who take up the art of rhetoric” and continues, “Training through the chreia not only produces a
certain power of discourse but also a good and useful character since we are being trained in the
aphorisms of wise persons” (qtd in Crowley Hawhee 28). In other words, for Quintilian the key was
to start small and work up to the complex aspects. As Quintilian famously put how a teacher should
treat a student, “let him adopt, then, above all things, the feelings of a parent towards his pupils”
(II.i.4). He continues with the parenting analogy, explaining how a teacher needs to come down to
his students’ level with, “as any fast walker, if he should happen to walk with a child, would give him
his hand, relax his pace, and not go on quicker than his companion could follow” (II.iii.7). What
better way to relate to students than by treating them as willing children, and what better method to
begin the progymnasmata with a modern audience than with the medium that often caters to those same children: comics. Yet the hierarchical student-teacher relationship inherent in the progymnasmata could be problematic when dealing with modern democracy classroom ideas, and this needs addressing.

**Critical Pedagogy**

Taking cues from John Dewey’s early 20th-century work, defined and popularized by Paulo Freire in the 1970s, and further explored and expanded by scholars in the 1980s, critical pedagogy is still a powerful theory. One of the pioneers of critical pedagogy, Henry Giroux, argues that “critical pedagogy offers the best, perhaps the only, chance for young people to develop and assert a sense of their rights and responsibilities to participate in governing, and not simply to be governed” (B15).

Russell K. Durst argues that critical, social-justice centered pedagogy is often portrayed as the most popular way to teach students to write (92). Critical pedagogy is a valuable theory because it offers a method for engaging students in ways of thinking that challenge their cultural assumptions and illuminate the ways in which their identities and cultures are socially constructed that can ultimately lead to improved and informed writing. To explore the value of critical pedagogy in the composition classroom, I will first seek a definition drawn from various theorists, from the movement’s ur-text, *Pedagogy of the Oppressed*, and from its author Paulo Freire, and I will conclude by demonstrating that critical pedagogy is valuable in the technical communication classroom.

Critical pedagogy isn’t easily taught or described; it’s a complex amalgamation of theories and practices aimed at helping students become aware of the power in the world that surrounds them and how it influences their thinking and writing skills. Many voices have added to the debate and the richness of material is far greater than what this modest essay can cover. Still, there are some cohesive characteristics of the movement that have emerged since its founding that can provide a definitional basis. Henry Giroux, one of the movement’s key advocates, defines critical pedagogy as
“the educational movement, guided by passion and principle, to help students develop consciousness of freedom, recognize authoritarian tendencies, and connect knowledge to power and the ability to take constructive action” (B15). Ann George suggests that critical pedagogy “envisions a society not simply pledged to but successfully enacting the principles of equality, liberty, and justice for all”, similar in tone to cultural studies and feminist pedagogies but different in its goal to teach “education for citizenship” (92 – 93). This politically charged aspect to the movement can be traced back to Pedagogy of the Oppressed.

In many ways, Pedagogy of the Oppressed is more humane and empathetic than it is radical. Freire’s background was in teaching peasants in post-revolution Brazil, which adds depth and humanity to the movement. Daniel Schugurensky praises Freire as a paradigm shifter whose theory “opened a new era in literacy training and improved significantly the efficiency and efficacy of the process” (211). Schugurensky argues the reason for the book’s success is due to its grounded basis in praxis, and he reiterates the relationship between social change and educational reformation (211). Freire wasn’t emphasizing political discussion in the classroom per se, but was using his theory as way to create a framework for practical action and learning.

In order to create this praxis, Freire argues for a democracy of education to occur between the oppressors and the oppressed. Freire explains that the oppressors cannot teach to the oppressed in conventional ways because it’s contradictory for oppressors to spur a liberating and revolutionary education against themselves (54). This declaration fuels the critiques of having middle-class Americans use the pedagogy. Traditionally, academia has used what Freire calls “the banking model” where the instructor’s knowledge is absolute and students are supposed to receive it and regurgitate it unchanged and unchallenged. This is problematic to Freire and he argues that for a democracy, the oppressed must be the ones to resolve their own predicaments and hence “the contradiction will be resolved by the appearance of the new man: neither oppressor nor oppressed, but man in the
process of liberation” (56). The idea is for a democratic, praxis-based approach to learning to occur between students and instructors that allows students to arrive at their knowledge. However this radical approach has drawn critique.

Most of the critiques of critical pedagogy aren’t attacks per se, but calls for improvements or adaptations. As Gregory Jay and Gerald Graff point out, critiquing the movement is only for its own good because it will allow its followers to be better armed against critics (202). Some scholars critical of the movement are not as friendly or optimistic. In Stanley Fish’s book, *Save the World on Your Own Time*, he worries that overly political classrooms distract from teaching actual writing. For brevity’s sake, I will divide the critiques and responses into two general clusters. The first critique is that the movement overly politicizes the composition classroom. This is countered by the idea of service-based pedagogies (see Bruce Herzberg’s “Community Service and Critical Teaching.”). The second critique is that critical pedagogy creates a false binary in its attempt to stereotype groups. This is countered by Ira Shor’s “discomforts of democracy” account of his democratic classroom experiments, which had its hiccups but was ultimately successful (see *When Students Have Power*) and Donna Qualley’s reflexive writing techniques.

While the pedagogical solutions aren’t complete, they offer fascinating examples of how critical pedagogy can be applied. As the 24-hour news cycle and an abundance of free information flood students’ intellects and further affirms their belief systems and as institutions become more about conformity than innovation, now perhaps more than ever is a pertinent time to showcase to students where their ideology originates and how it affects their worldview. This could foster a democratic classroom as Shor and Freire hope, or at a more basic level can help them analyze sources and understand persuasion. While critics like Fish suggest sticking to grammar and writing (44), scholars have shown that social justice and writing aren’t mutually exclusive. Because the world
still oppresses, the need for responsible citizens and communicators can be achieved through writing approaches in critical pedagogy.

However, since I needed students to analyze their products for my research, the democracy approaches used by Shor were too risky. While elements of my teaching always provoke a bit of the discomforts of democracy and Geoffrey Sirc’s composition as a happening (see his book *Composition as a Happening* where Sirc compares teaching in the classroom to the happenings art movements of the mid-twentieth century), I needed this study to be specific and guided with authority. Because of this, I incorporated texts and mediums that challenged power and ideas, but my teaching strategy came from progymnasmata.

**Interweaving Progymnasmata and Critical Pedagogy**

Part of why critical pedagogy must be addressed when discussing comics is because of the politics behind people’s reluctance to accept comics as a teaching medium. James Bucky Carter argues that if instructors refuse to incorporate comics in the classroom, it is a political statement “that we do not care much for others who think, read, and decode differently from the narrowest notion of reading and literacy” (53). Too often critical pedagogy teaches democracy and to challenge worldviews, but does so through traditional methods that can be unintentionally hegemonic or biased—like alphabetic literacy. Carter goes on to mention how underprivileged groups that are considered illiterate are often actually adept at reading codes and deciphering meaning but such skills were undervalued in their education (53). He suggests that expanding into comics and other underrepresented mediums actually strengthen literacy (58). I agree with Carter on this topic. If we believe in critical pedagogy, we must embrace change and explore all means of communicating. As Freire famously said, “do not follow me; reinvent me” (Schugurensky 212).

Using progymnasmata to teach comics production and critical pedagogy to justify alternative texts can be supported within the New London Group’s design elements. The New London Group
argues for four major design concepts: situated practice, overt instruction, critical framing, and transformed practice. Situated practice is defined as “Immersion in experience and utilization of available discourses, including those from the students’ lifeworlds and simulations of the relationships to be found in workplaces and public spaces” (207). Both in design and study, having students start with the familiar and work to the strange helps them adapt available discourses. Another element is overt instruction: “Systematic, analytic, and conscious understanding” that “requires the introduction of explicit metalanguages, which describe and interpret the Design elements of different modes of meaning” (207). Progymnasmata introduces new languages and design incrementally in a process that builds on itself, which caters to the definition of overt instruction. Critical framing means “Interpreting the social and cultural context of particular Designs of meaning. This involves the students’ standing back from what they are studying and viewing it critically in relation to its context” (207). While progymnasmata can achieve this goal, critical pedagogy is especially effective in carrying out this goal. Transformed practice means to “Transfer in meaning-making practice, which puts the transformed meaning to work in other contexts or cultural sites” (207). Students take the critical ideas they’ve learned from the materials and the mediums of production and apply it to a comic that they design. Critical theory and progymnasmata weave together to achieve this goal.

**Study Design and Methods**

I knew I wanted to research comics for my dissertation from my first semester in my PhD program, but it wasn’t until a conversation with Michael Mendelson that I began to draft the empirical study I carried out in the classroom. The initial study was carried out in the composition classroom with an emphasis on argument instead of instruction and description. Halfway through my composition research I realized the potential of applying the research toward technical communication. While I continued the composition research for four courses because I truly believe
in the argumentative power of the medium, I focused my dissertation on technical writing. I did this for two primary reasons: the need for visual literacy in technical communication is a concrete reality as technical comics already exist in the marketplace, but pedagogical studies of comics are rare in technical communication scholarship.

This section describes the qualitative empirical research I carried out at Iowa State University from my progymnasmata-fueled approach of using comics to teach visual literacy. I will first address the site of the research: Iowa State University, the ISU Advanced Communication courses, and a description of my demographics. Next I will discuss my questionnaire, the IRB approval process, and privacy concerns. Finally, I will detail my syllabus and pedagogical study and relate it to the progymnasmata and critical pedagogy described earlier.

**Iowa State University Advanced Communication Courses**

Iowa State University, a Carnegie-designated very high research active university, rests among trees and landscaped lawns in Ames, Iowa—population around 60,000. As part of the Department of English, the advanced communication courses (ISUComm for short) offer various courses to undergraduates in the humanities, sciences, engineering, business, and other fields. Course range from rhetorical analysis and grant proposal writing to technical communication and science writing. The technical communication course (English 314) offers traditional technical communication assignments (e.g., professional communication, technical descriptions, instructions, etc.) based in a WOVE approach (meaning written, oral, visual, and electronic communication). The traditional class size caps at 24 students, the majority of whom are undergraduate engineers sprinkled with other science and humanities majors. The total number of students in my study was 96. In my courses, the majority of students were primarily white, American males with an average of four or five females. A few international students also populated my courses, the majority coming
from China. The class met twice a week, one class in a regular classroom (with smart technology available) and one in the computer lab (except during my summer course, where students met daily).

At the end of the semester, after both the analysis and design of comics had been completed, students were issued a questionnaire that they had the option to either answer or ignore. The questionnaire was approved by the Iowa State University IRB for the composition course research I initially did and was approved for continuing research status. The students were given ten open-ended questions that they could then answer on their computers or by pen. After administering the surveys to the students, I left the room. After they completed their work, they turned in a signed waiver release form in one pile and the completed questionnaires in a different pile. A volunteer student gathered them together and put them into an envelope. That same student then went outside the classroom to tell me they were finished. I first carried out this study in Fall 2012 with two sections of English 314. I followed this up with a stand-alone English 314 class in Spring of 2013. I did a final gathering of data from an English 314 class in the summer of 2013.

While elements of my approach changed from one class to another, the questionnaire remained the same. The initial questions came from brainstorming with Michael Mendelson with further counsel given by Professor Barbara Blakely. It consisted of the following ten questions:

1. Have your perceptions of comics changed from the beginning of this semester to now? Why or why not?
2. In what ways have they remained the same?
3. What elements, if any, of composing in comics did you find to be the most difficult?
4. What elements, if any, were simpler than regular composition?
5. Did anything surprise you about the process? If so, what?
6. In studying comics this semester what differences did you find between our traditional instructions and the comics, such as those by Will Eisner and Scott McCloud (for example,
what was easier to understand in traditional instructions and what was easier from the comic book, what was more difficult, what was different, etc.)?

7. Did anything in comics composition or reading facilitate your reading? If so what?

8. What was the most difficult aspect of composing your own comic? Why?

9. What differences stood out to you between the composition of traditional texts and your comics?

10. Would you like to add any additional comments or questions?

The questions were prefaced with the statement: “Please answer the questions below as accurately and honestly as you can. There is no correct or incorrect answer; the goal is merely explore your thoughts on the topic of educational comics.” Because of these steps, the answers remained entirely anonymous. I have kept them stored in my desk and none of the pages reveal anything of the writer’s identity. Even the few handwritten ones are anonymous because I have no handwriting sample from the students to compare them to. In an ideal situation, this study would have been carried out by a researcher that wasn’t also the teacher; however, that option was not possible. It is impossible to know if students felt pressure from my authority to answer in a certain way, but all of the aforementioned steps were done in order to minimalize any such influences. If the reader is interested in further details about the questions, the release forms and questionnaires are found in Appendix A.

**Class Content and Schedule**

For all four classes I used Richard Johnson-Sheehan’s *Technical Communication Today* as the core textbook anchoring the content. While the schedules varied slightly, the setup primarily gave the first half of the class time dedicated to traditional textbook techniques, with the third quarter being dedicated entirely to comics, and the last fourth returning to a traditional technical communication topic of usability testing. I altered the classes and assignments slightly each semester
after learning what worked well and what did not but I kept the questionnaire the same throughout the study. Because of this, I will go over the three different semesters’ approach to my topic.

My approach for the first two classes was to have students create instructions through comics. Aside from reading comics, they first wrote a script of their instructions in purely alphabetic text. Then they adapted their script into a comic strip of instructions. After this first approach, I decided to alter some of the syllabus to make it more efficient. I realized that McCloud’s work seamlessly combines description and instruction, and I wanted students to be able to design in a similar fashion. Aside from that, I really wanted to focus on adaptation of their materials (or remediation). To accommodate this, I had students create both a traditional technical description and instructions as separate assignments. Once the comics section began, I changed some of the assigned readings and homework. This led to an interesting dilemma for students because students were faced with Qualley’s description of earlier selves becoming “others” (139). As James Berlin mentions in Rhetorics, Poetics, and Cultures, when students are faced with multiple viewpoints from unfamiliar mediums with unfamiliar messages, the learning has to become “dialogic” (102). Qualley argues among similar lines, observing that, “students must not only draw on their earlier work to help them make sense of their current work, they must also use the perspectives gained from their current reading and writing to uncover subjects they have already covered” (150). Students now were challenged to create instructions that incorporated all of these critical goals, yet they are only vaguely aware of the goals and otherness because of the progymnasmata learning approach.

Over the three semesters, the assignment also shifted from being about creating an instructional comic using traditional techniques to adapting previous work from either an instruction, a description, or a combination of both. The script then became an actual adaptation instead of a hypothetical one. However, I found no difference in student’s responses between the two studies in either themes or codes.
Just like progymnasmata, the order of the comics I introduced to students mattered. Due to the underlying purpose of starting with the familiar and building on what the students know with each additional step, I organized their reading of several assigned books and comics that ranged from literature to instructions in a step-by-step fashion in the following sequence:

1. *Fractured Fables* selection
2. Other traditional comics
3. *American Born Chinese*
4. *Understanding Comics* section
5. *Howtoons* section
6. Arduino comic
7. “How to Solder” comic
8. *PS Magazine* section
9. *Google Chrome* online comic

These sections are organized by fiction comics (1 – 3), non-fiction comics (4, 6 – 10), and instructional/descriptive comics (5 – 10).

To build on the familiar I first introduced instructions to students from their traditional textbook. This step connected them to the previous instructional techniques they had been exposed to. Then we stepped away from the traditional form and worked into the strange. However, that first step was easy as they read a combination of fictional online and printed comic strips, a format almost all of them were familiar with (such as webcomics like *xkcd*, *Chainsawsuit*, *The Far Side*, etc.). Then they read a slightly longer and more experimental comic strip called “Some People” by Luke Pearson. A complex comic strip, this long-form online comic features various characters in varying timelines that intersect. They now saw an artform that was slightly familiar becoming stranger. The
next step was for them to read a full-length fictional graphic novel. To keep up the theme of critical pedagogy, they read *American Born Chinese* by Gene Luen Yang. *American Born Chinese* was the first graphic novel nominated for a National Book Award and covers themes of race, identity, American culture, and religion. With a deceptively simple design (large margins with usually fewer than five panels per page), the complex message is able to manifest itself. After reading a complicated, but short, comic strip, they now read a simple, but lengthy, comic book. This ended of the first phase of the progymnasmata.

At this point, the study abandoned fiction and trekked into non-fiction. While many students were familiar with comics at the beginning of class, the move into non-fiction was a new move for most all of them. Their first non-fiction comic was an excerpt from Scott McCloud’s *Understanding Comics*. The books’ complex definition strategy (which has technical elements) led to philosophical questions about medium and the meaning of words. Now that students had experienced non-fiction comics, the next step was non-fiction instructional or descriptive comics.

After reading the excerpts, the first instructional comic book is introduced to them, and fitting in with the progymnasmata, the book mixes the familiar fictional elements with instructional ones (like Eisner predicted). The book is *Howtoons: The Possibilities Are Endless* by Saul Griffith, Joost Bonson, and Nick Dragotta. While targeted at children, the story-driven instructions provide an nice primer for students to experience instructional comics. They then read two shorter comics that are primarily instructional but have descriptive elements too. The first is “Arduino” by Jody Culkin, which instructs and describes arduino, “a microchip, which is a very small computer that you can program to respond to things” (Culkin 1). The comic features the author as avatar, like McCloud’s work, and therefore builds on the trend of avatar-hosted non-fiction comics. An avatar is not required to tell non-fiction comics but since McCloud’s *Understanding Comics*, this has become the norm. The second shorter comic is “Soldering Is Easy: Here’s How To Do It” by Mitch Altman,
Andie Nordgren, and Jeff Keyzer, which offers an avatar-free, straightforward instructional manual on soldering. Now students see that avatars aren’t required for comics and that the format can look like traditional instructional material.

The non-fiction instructions continue with an introduction to Will Eisner’s PS Magazine, which offers more instructional material and provides more critical elements for them to analyze. Eisner’s work, while instructional, also features stereotypes, misogyny, and sexism. Partially a product of their time (fifty-plus years ago), they also have problematic aspects due to Eisner’s belief that the storyline had to prevail in technical comics. However, PS Magazine offers students the chance to view the world from different lenses while also demonstrating that a modern audience won’t tolerate inappropriate content. Then students read McCloud’s Google Chrome comics instruction/description.

McCloud’s Google Chrome instruction/description is an interesting hybrid of instruction, introductions, and descriptions that Google hired him to create in order to introduce clients to their web browser. The document is interesting because it mixes description and instruction in a way that tells a story and also serves as a marketing tool. Students read this to see that with the medium of comics, instructional texts can be blended with other genres to make the reading more interesting.

For the last two classroom studies, the order and assigned comics for reading remained the same in both variations with the exception of adding The 9/11 Report: A Graphic Adaptation by Sid Jacobson and Ernie Colon as their last assigned comic book. The book is an official comics version of the actual The 9/11 Report, showcasing adaptation techniques and technical description to students. While McCloud’s work serves as a mixture of instruction and description, Jacobson and Colon’s book shows that a descriptive text can be written in comics as well.

For the first two technical communication courses I taught using this research method, I had students create an instructional manual in comics format. To do so, they had to create a topic they
could write about with relative ease and authority. Then they had to write a script where they imagined the steps needed and their accompanying visuals. Finally, they created the actual comic document based on their script. Later I realized that a better option would be to allow them to either do an instruction document, a technical description, or a combination of both. This is partly because the materials we read were often not just instructions, but also contained technical descriptions. Moreover, there exist a healthy amount of technical description comics that I was able to justify in my teaching section, especially the inclusion of the 9/11 Report, which was far more like a description than an instruction. Also, I wanted students to experiment with adaptation while working on their scripts because it added a valuable additional genre to the workflow without requiring a separate assignment. In order to do this, I assigned them a more traditional instruction set first and then had them adapt either their previous instructions or descriptions (or combine them) in comics form. While this change is subtle, it did affect few students’ responses. However, they weren’t noticeable enough to necessitate me distinguishing between students’ responses in the results section.

One of my major goals of this research project was to have students create and design their own images rather than rely on others’ images. However, I never clarified this in the assignment description to students, so a few students relied on Google images instead of using their original images. This wasn’t inherently problematic because the amount of work for them to find matching images to fit their assignment goal usually led to them getting a low grade which motivated them to revise. In the future, I should clarify to students that I will accept only original images.

While learning to analyze comics as a medium, students began learning how to adapt their own technical work into comics. Their first step was to write a purely alphabetic text script. Then they begin hand-drawing their drafts during class and at home. Next, I introduced to them various free software that offers digital approaches for them to design with. The software ranges from
InDesign (encouraging a hand-drawn approach that is then scanned and digitalized), ComicLife 2 (which allows photo-comics and a simple setup to use original content), Pixton (which allows complex backgrounds and avatar design that they can do but also features content which looks identical to others’ work), and others. For the final step, they applied all of the analysis they’d learned from the comics they studied in class, the information they’d discussed about instructions, and the feedback they’ve gotten from me and their peers on the script and designed their own comics. It’s important to note that both the design element and the analysis element happened simultaneously. While student’s finished products aren’t necessary to analyze for this discussion, I have included around ten finished student comics examples in Appendix B that offer a broad range of student work. The examples incorporate multiple modes in their creation (from being drawn-by-hand to being made in online software) and are of varying levels of quality.

**Theoretical Support for Qualitative Research**

In order to justify the methodology I chose in creating my classroom study, I first need to analyze qualitative theory and coding research. Johnny Saldaña wrote *The Coding Manual for Qualitative Researchers* in order to cover multiple coding and qualitative research approaches in a satisfying beginner’s guide. While many books and articles can aid qualitative research theory, Saldaña excels in creating simple guide whose organization serves as the framework for my methodology section by using five steps. The first step is to briefly address qualitative research’s strengths and weaknesses. Then I will move into a definition of questionnaires and justify my using them. Next I will address the lenses that both researchers and responders use when approaching research. Then I will analyze coding procedures by defining them and analyzing their patterns. Finally, I will look at ways of analyzing the data and how I will extract finding and conclusions.
Qualitative Research in the Classroom

My research lies under the categorization of qualitative empirical research because my research question was best understood by collecting “diverse data” from human beings (Creswell 18). Since objectivity and qualitative aren’t exactly synonyms, I had to rely on what Juliet Corbin and Anslem Strauss label as “subtle clues” in my results to create themes to answer my research questions (27). This concept is known as sensitivity and relies heavily on the researcher’s previous hunches as well as careful analysis of collected data (Corbin and Strauss 41). Research is a mixture of art and science and more than one story can emerge from data (Corbin and Strauss 50). While this approach has problems, which I will address, it’s important to note that qualitative studies attempt to justify an approach, which is what I’m attempting with this study (Corbin and Strauss 42). While the coding I do will be heuristic (as Saldaña suggests, 8), my questions originate from a hypothesis, not from probing students and looking for the emerging story.

My qualitative research has a basis in pragmatists (Corbin and Strauss 3). As John W. Creswell points out, “pragmatism is not committed to any one system of philosophy and reality” (10). Many assumptions in methodology based on Pragmatist and Interactionist ideas account for humans being complex and whose actions occur because of developed selves that change as humans grow and experience the world (Corbin and Strauss 8 – 16). Because of this, the research departs from pragmatism in the sense that I subscribe to the notion that reality is complex, and no matter how much I read into the data I collected, it will be obscured by my personal viewpoint, hence the responses from my students will be skewed by their viewpoints as well as their potential subconscious concern in pleasing the authority figure.

My empirical, qualitative research falls under the category of teacher research as Ann Blakeslee and Cathy Fleischer define it: I’m studying a question that arose from my pedagogical approach (103). My study sought to record what comics design and analysis afforded. In order to
evaluate how students reacted to it, I issued questionnaires that probed into their experience during my teaching unit.

The main data collection format I used for data came from questionnaires given to students. These questionnaires could be considered surveys, but I rely on Ann Blakeslee and Cathy Fleischer’s differentiation between the two. Questionnaires are more informal and open-ended in nature, target a smaller group of people, and belong to certain context (i.e., my classroom) (145). Creswell suggests that questionnaires are merely a type of survey, so it could be said I’m using surveys (12). My research is based in 96 respondents from four courses I taught: this is hardly a wide-reaching survey, as Blakeslee and Fleischer define it. That said, when the two are meant as synonyms, I do refer to the research questionnaires as surveys. Unlike some qualitative strategies, my research isn’t traditional grounded theory, which involves “using multiple stages of data collection and the refinement and interrelationship of categories of information” (Creswell 13). The only refinement in my study came from adapting the strategies from one class to the next while issuing the same questions. However, the themes that emerged from students’ responses ultimately determined the results and answered my research questions in not entirely predictable fashions. Their responses altered my initial research goals as well. Because of these reasons, I would classify my results being rooted in grounded theory.

A common element of survey research (including questionnaires) is a discussion of the demographics of the participants. This can include a population’s statistics like “age, gender, salary, years of experience, level of education and so forth” (Hughes and Hayhoe 95). Part of why I didn’t gather this kind of information is because I needed the data to remain anonymous and that information is not vital for my outcome. Nevertheless, I have the gender data and general age information from each of the classes where I gathered information. I also didn’t ask this because had
I done so, I could have potentially matched the demographic information to students through deductive reasoning, and this would undermine the anonymity vital to my research.

The tendency for bias to occur is not necessarily completely negative; it allows a closer look at the lenses we wear and the filters we use. Corbin suggests that an individual’s backgrounds and biases actually contribute to providing an interesting take on the static questions, or researchers construct meaning from stories “constructed by research participants” (Corbin and Strauss 10). As long as the reader and researcher remember the underlying constructionist bias, then the research discovered in studies like mine can still contribute to a greater understanding of the topic at hand and lead to future studies done on a larger scale.

As the participant’s instructor, I am an authority figure and could influence students in an unwanted way. I worked on overcoming this by incorporating usability approaches to let students know my interest was in their honest responses, not in answering the way they thought I wanted them to. While the participants knew I was studying comics and they were part of my research, I was careful not to inform them of my hypothesis or exact purpose. I also worked hard to assure students that their participation in all the research was voluntary. The release form specifically stated that they did not have to answer the questions if they didn’t feel comfortable doing so—and many didn’t. Additionally, while my research is not a part of grounded theory, it was exploratory in the sense that I continually amended my initial research questions and project outcome as I progressed. Because of this, even I was not consciously aware of what responses I was looking for throughout the study.

**Coding and Analysis**

Upon completing my classroom study, I had a pile of unsorted data that I needed to make sense of, so I turned to coding. In order to understand coding it’s useful to look at a few leading scholars’ definitions of the topic. Saldaña defines coding in qualitative inquiry as a symbol used to encapsulate a chunk of visual or written data (3). Corbin and Strauss define coding
as interacting with raw data and “raising it to a conceptual level” that is more than just paraphrasing because it interacts with the data through questioning and making connections to become representational concepts (66). Blakesle and Fleischer define it in a bit more practical manner, calling it a marking system to categorize the themes the researcher identifies by reading through the data multiple times (176). Coding occurs naturally in analyzing data, but approaching it in a systematic way helps curb misunderstood data and contributes to appropriate meaning making. However, it’s important to remember that qualitative data isn’t exact and infallible, but relies on intuition, creativity, and trust (Corbin and Strauss 16). Therefore, value can be found in analyzing various coding strategies.

Saldaña recommends a first and second cycle, the first focusing on broader codes, the second homing in on the topics or continuing on the broad approach (4) because the researcher usually is incorrect the first time around (10). Saldaña says that patterns in coding consist of similarity, difference, frequency, sequence, correspondence), and/or causation (6). Blakeslee and Fleischer add that the researcher must question how the data resulted in the observed categories and why the researcher attributes the unintended or intended meaning (177). I read through my completed data multiple times before I settled on my final themes. As I compiled my data and began organizing it into the next chapter, many themes combined and others disappeared. As I coded through my data, I constantly questioned my motives as Blakeslee and Fleischer warn, because I wanted my results to be as objective as possible.

Coding is not immune to lenses and filters, and being aware of this can improve the results and themes taken from data. The most common form of this happens when the researcher becomes attached to a particular outcome and thesis. These lenses can help by making the analysis more productive, but can also limit the research if one becomes too attached to a particular perspective (Blakeslee and Fleischer 59). Since the topic at hand stems from a hypothesis that I argue
theoretically, the key will be for me as a researcher to not fixate on finding data in the students’ responses that validate my theoretical hypothesis, but instead I must look at what the data suggests, even if it contradicts my scholarly and pedagogical goals.

Once the data was coded and basic themes identified, my next step was further analysis to discover themes and—ultimately—arrive at theory. I then looked at the material on a deeper level, assuring that I wasn’t just reaffirming a predestined “truth” or that my biases weren’t overriding the more telling data (Blakeslee and Fleischer 167). Ruth Shagoury Hubbard and Brenda Miller Power call this the “murkiness of data analysis” and say it occurs when the researcher’s analysis is too easy (qtd. in Blakeslee and Fleischer 168). I was conscious of this trend as I analyzed data and checked, double-checked, and triple-checked my results to make sure I was understanding the meanings.

Yvonna Lincoln and Egon Guba suggest using the following analytical tools to create theory: filling in, extension, bridging, and collapsing. Filling in means adding codes and reconstructing a coherent scheme as new insights emerge, which usually happens if too much of the data are unaccounted for in the original scheme, or if too much of the data fit into only a couple of categories). Extension consists of returning to materials coded earlier and interrogating them in a new way, with a new theme, which usually happens if some of the data fit but much of it doesn’t fit well and important ideas seem to have no place in the current scheme. Bridging is seeing new or previously not understood relationships within units of a given category. Collapsing combines what were two or more separate categories into one or two if the differences between them seem trivial or meaningless in light of the overall results (qtd. Miles and Huberman 76). Another set of tools comes from Lofland et al’s division of separating by meanings, feelings, and hierarchical aspects (qtd in Saldaña 14). These analytical tools are valuable ways to condense and observe data.

Saldaña argues that coding leads to categories, which combines codes into larger groups (9). Out of the categories comes themes and then theory (Saldaña 11 – 12). Corbin and Strauss point
out that more than one possible core category can emerge, but they suggest choosing one theme as the principal theme (Corbin and Strauss 105). After accomplishing this step, the researcher creates a theory and validates it “by comparing it to raw data or presenting it to respondents for their reactions” (Corbin and Strauss 115). Once this is accomplished, then the theme is ready to be inserted into the research. I coded around 42 themes, but fewer than half ended up contributing to my research questions.

**Theoretical Support Wrap-up**

Although research isn’t traditional grounded theory in that I rely on static questionnaires and not multiple interviews, my teacher research-based classroom study falls under the category of qualitative research. Qualitative research works nicely for my topic and as a primer to see if my study and argument for comics design can be plausible. Since I am a teacher issuing the questionnaires to my students and because they are dealing with a new medium, I need to be especially aware of lenses, filters, and bias in responses. Coding is a process that looks for meaning in the mounds of responses. The codes that emerged in my research will be addressed later. Once the coding is accomplished, a researcher must create themes and then theory. I will also discuss my themes and theories in the next chapter.

**Categories and Themes by the Numbers**

This section addresses the question categories and themes from the questionnaires administered to students. To do this, I will first look at the questions I asked from the questionnaire and the three categories they fit in. Next I will discuss the differences between the methods I used to teach the four different classes to see if differing instruction affected outcomes. Then I will look at the common themes that emerged in each major section of reading, designing, and reading/designing and all of their possible combinations.

**Question Categories**
As mentioned previously, my research began to shift as I drafted my progymnasmata approach to seeing how well comics could teach visual literacy. Because of this, I focused my research questionnaire to primarily cover the design—or creation—aspect of students’ work: how well they responded to creating comics for a technical assignment and the extent to which it taught them visual literacy in any fashion. Nevertheless, I believed then (and still do) that in order to prove comics’ design capabilities, the way they are read by students still warrants attention and discussion. Because of this, I kept a number of questions on the questionnaire covering the reading aspect of the research, especially since my approach to teaching comics production relied heavily on exploring the form itself and in reading different genres. The rest of the questions focused on the student’s design and composition of comics.

The questions from the questionnaire can be divided into three sections: reading assessment, design assessment, and reading/design combination assessment. These sections do not correlate to the numerical order; instead they can be organized thusly:

<table>
<thead>
<tr>
<th>READING-THEME QUESTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have your perceptions of comics changed from the beginning of this semester to now? Why or why not?</td>
</tr>
<tr>
<td>2. In what ways have they remained the same?</td>
</tr>
<tr>
<td>6. In studying comics this semester what differences did you find between our traditional instructions and the comics, such as those by Will Eisner and Scott McCloud (for example, what was easier to understand in traditional instructions and what was easier from the comic book, what was more difficult, what was different, etc.)?</td>
</tr>
</tbody>
</table>
DESIGN-THEME QUESTIONS

3. What elements, if any, of composing in comics did you find to be the most difficult?
4. What elements, if any, were simpler than regular composition?
5. Did anything surprise you about the process? If so, what?
8. What was the most difficult aspect of composing your own comic? Why?
9. What differences stood out to you between the composition of traditional texts and your comics?

COMBINATION-THEME QUESTIONS

7. Did anything in comics composition or reading facilitate your reading? If so, what?
10. Would you like to add any additional comments or questions?

Initial Coding Themes

Dividing the questions into reading, design, and a combination of the two works well enough for answer purposes, but for coding themes it works less effectively. Due to the overlapping nature of the emerging themes I coded, I’ve created a primary-color theme category to show how the themes interrelate. Reading-theme codes are labeled in red, design-theme codes are labeled in yellow, and combination-theme codes are labeled in blue. Therefore, if a reading theme (red) combines with a design theme (yellow) the duality is labeled as read/design (orange) even as it’s listed under its respective question organization. If a reading theme (red) combines with a combination theme (blue) the duality is labeled as read/combo (purple). If a design theme (yellow) combines with a combination theme (blue) the duality is labeled as design/combo (green). If the theme transcends all three, it is labeled as r/d/c (black). What follows is a series of tables labeling themes that emerged and their different categories. The numbers that follow in parenthesis indicate
which questions they appeared on. Explanations of the themes will be explained in the following section.

### Reading-Theme Codes

<table>
<thead>
<tr>
<th>Theme Codes</th>
<th>Appears on</th>
</tr>
</thead>
<tbody>
<tr>
<td>cartoons [oops]</td>
<td>(2)</td>
</tr>
<tr>
<td>comics strengths [com-s] and/or comics weaknesses [com-w]</td>
<td>(1, 2, 6)</td>
</tr>
<tr>
<td>effective [e]</td>
<td>(6)</td>
</tr>
<tr>
<td>entertainment vs. useful [evsu]</td>
<td>(6)</td>
</tr>
<tr>
<td>just entertainment or superheroes [je]</td>
<td>(1)</td>
</tr>
<tr>
<td>I did it!</td>
<td>(1)</td>
</tr>
<tr>
<td>nerds/kids/funny/still childish</td>
<td>(1, 2)</td>
</tr>
<tr>
<td>still for entertainment [ent-g] or [ent-b]</td>
<td>(2)</td>
</tr>
<tr>
<td>unchanged [un]</td>
<td>(1, 2)</td>
</tr>
</tbody>
</table>

### Design-Theme Codes

<table>
<thead>
<tr>
<th>Theme Codes</th>
<th>Appears on</th>
</tr>
</thead>
<tbody>
<tr>
<td>art is easy [aic]</td>
<td>(3, 4)</td>
</tr>
<tr>
<td>design/organization [org]</td>
<td>(3, 4, 5, 8, 9)</td>
</tr>
<tr>
<td>narrator [nar]</td>
<td>(3, 8, 9)</td>
</tr>
<tr>
<td>new medium [new]</td>
<td>(3, 8)</td>
</tr>
<tr>
<td>other’s images [o. image]</td>
<td>(3, 5)</td>
</tr>
<tr>
<td>planning [plan]</td>
<td>(4, 5, 8, 9)</td>
</tr>
<tr>
<td>plans&gt;product [plans&gt;]</td>
<td>(3, 8)</td>
</tr>
<tr>
<td>product &gt;expectation [product&gt;]</td>
<td>(5)</td>
</tr>
<tr>
<td>revision/editing [rev]</td>
<td>(4)</td>
</tr>
<tr>
<td>same as question 3 [c#3]</td>
<td>(8)</td>
</tr>
<tr>
<td>time-consuming [time]</td>
<td>(5)</td>
</tr>
<tr>
<td>tone [tone]</td>
<td>(3, 4, 9)</td>
</tr>
</tbody>
</table>
### COMBINATION-THEME CODES

<table>
<thead>
<tr>
<th>CODES</th>
<th>Appears on #</th>
</tr>
</thead>
<tbody>
<tr>
<td>question problems [L?]</td>
<td>(7)</td>
</tr>
</tbody>
</table>

### READING/DESIGN-THEME CODES

<table>
<thead>
<tr>
<th>CODES</th>
<th>Appears on #</th>
</tr>
</thead>
<tbody>
<tr>
<td>experienced (with or without tech) [exp] or [ewt]</td>
<td>(1, 2, 6, 8)</td>
</tr>
<tr>
<td>story [story]</td>
<td>(2, 3, 4, 6)</td>
</tr>
<tr>
<td>transitions/flow [trans]</td>
<td>(3, 4, 5, 6)</td>
</tr>
<tr>
<td>writing issues and elements [wi]</td>
<td>(3, 4, 5, 6, 8, 9)</td>
</tr>
</tbody>
</table>

### DESIGN/COMBO-THEME CODES

<table>
<thead>
<tr>
<th>CODES</th>
<th>Appears on #</th>
</tr>
</thead>
<tbody>
<tr>
<td>core writing [core]</td>
<td>(3, 4, 5, 8, 9, 10)</td>
</tr>
<tr>
<td>creativity [crtvty]</td>
<td>(5, 9, 10)</td>
</tr>
<tr>
<td>software [sw]</td>
<td>(3, 5, 7, 8, 9, 10)</td>
</tr>
<tr>
<td>visual learner [wi]</td>
<td>(5, 10)</td>
</tr>
</tbody>
</table>

### READING/DESIGN/COMBO-THEME CODES

<table>
<thead>
<tr>
<th>CODES</th>
<th>Appears on #</th>
</tr>
</thead>
<tbody>
<tr>
<td>art is hard [aish]</td>
<td>(2 – 5, 6 – 10)</td>
</tr>
<tr>
<td>color capacity [cc]</td>
<td>(2, 6, 7, 9)</td>
</tr>
<tr>
<td>enjoyable/encouraged reading [en]</td>
<td>(2 –7, 9, 10)</td>
</tr>
<tr>
<td>juxtaposed [jux]</td>
<td>(2 –9)</td>
</tr>
<tr>
<td>medium elements [me]</td>
<td>(2, 3, 7)</td>
</tr>
<tr>
<td>nothing [no]</td>
<td>(1, 3, 4, 5, 7, 10)</td>
</tr>
<tr>
<td>other [o]</td>
<td>(1 – 8, 10)</td>
</tr>
<tr>
<td>pictures [pix&gt;]</td>
<td>(2, 4, 5, 6, 7, 9)</td>
</tr>
<tr>
<td>technical communication [techcomm]</td>
<td>(2, 5, 10)</td>
</tr>
<tr>
<td>unsure [?]</td>
<td>(2, 3, 4, 5, 7, 10)</td>
</tr>
</tbody>
</table>
As visible by the color-coding, the majority of the themes (21 total) fit in only one of the three categories. Of those belonging to only one category, 10 are unique to specific questions and 12 cross multiple questions. The remaining twenty themes fit inside one or more of the three categories, with 10 fitting in all three categories, four that fit inside reading and design, four that fit inside design and combination, and two that fit inside reading and combination. For a brief summary of each individual code category and what they mean, see Appendix A. Forty-two themes is too unruly for readers to keep track of, so because of this I combined the themes into a handful of manageable categories that span the seven question combination categories. After writing up students’ responses and doing additional analysis overarching categories: Attitudes Toward Comics, Stance Towards Comic, Planning to Design Comics, Design Obstacles in Comics, and Product Observations about Comics. These overarching themes traversed the different question combination categories. In chapter four, I will rely on these overarching categories and refer to them as the themes. That said, these overarching themes need some explanation.

**Final Themes**

While a full explanation of the five major themes will be found in Chapter four, it’s useful to give a primer organization pattern to show how the themes I used in coding became the themes I’ll use to dispense the data. As previously explained, I organized the results by the question category combinations (as displayed in the tables above with the unique subcategories appearing in each table); however, for data dissemination, some of the question categories can be combined. Reading and Reading/Combo categories will be combined into one category of Reading. Design and Design/Combo categories will be combined into one category: Design. The stand-alone Combination question category doesn’t contribute to the discussion so it will be eliminated. This means that the remaining question themes will be divided into four question categories: Reading Theme Codes, Design Theme Codes, Reading/Design Theme Codes, and
Reading/Design/Combination Theme Codes. Within each category will be the overlapping themes that included my original coding themes. They will be labeled in the graphs below:

*Reading Themes*

```
Reading Question Themes

Attitude Towards Reading Comics    Stance on Reading Comics

Attitudes Toward Reading Comics

Comics Audience    Genre Expansion to Tech    Comics Purpose Unchanged

Just superheroes    Nerds/etc.    Still for Entertainment    Unchanged
```
Design Themes

Stance on Reading Comics

- Reading Comics Aids Readers
  - Comics Strengths
  - Effective
  - Empathy by Participating

- Comics' Worth Questionable
  - Comics Weaknesses
  - Big Picture
  - Entertainment vs. Useful

Design Question Themes

- Planning Comics
- Design Obstacles
- Final Product Observations
Final Product Observations

- Ease of Medium
  - Art Is Easy
- Time Issues
  - Time-consuming
  - Revision
- Visuality
  - Creativity
  - Visual Learner

*Reading/Design/Combo Question Themes*

- Reading/Design/Combo Themes
  - Design Obstacles
  - Stance on Designing and Reading Comics
**Conclusion**

The theory driving my classroom study was based in progymnasmata and critical pedagogy. I weaved the two together to create my classroom study. While this was complicated because of various contradicting themes in the two, it succeeds because of the New London Group’s design definitions and the multifaceted goals of my research. My classroom study consisted of four
technical communication courses taught over the course of three semesters. Students participated in a reading program of comics before designing their own. They filled out an anonymous questionnaire with ten questions. I used various qualitative theories to sort through the data and found dozens of subcategory themes that I combined into five major themes that will be used to organize the data in chapter four.
CHAPTER FOUR: RESULTS OF THE STUDY

At Iowa State University, where I conducted my classroom research, a sizeable presence of Chinese students major in the STEM programs, and since a requirement for STEM student’s graduation includes taking an upper-level professional writing course, my average technical communication classroom had between five and twelve Chinese students per 24. As outlined in chapter three, part of the reading section of my research revolved around the award-winning graphic novel *American Born Chinese*. I never quantified or recorded students’ specific reactions to the book, but I often focused on my Chinese students during the discussions and more often than not, these typically quiet students would speak up. Here was a book addressing race, identity, and fitting in to foreign cultures that used Monkey King imagery and Chinese mythos, so it made sense that Chinese students’ interest would be piqued. American students often reacted positively to these discussions as well and asked the Chinese students more about their culture in return.

One class period, after discussing *American Born Chinese*, I noticed one of the Chinese students was playing the wait-for-students-to-clear out routine so he could talk to me in private. Once the lab had emptied, he tentatively walked toward me, copy of *American Born Chinese*, in his hands. “Excuse me,” he said. I addressed him by name and asked how I could be of service. “I—uh—wanted to say,” he said in his broken English, “that this book *American Born Chinese* is, uh, very special.” He then explained to me how the book had moved him in a way he couldn’t quite describe. The cliché of being at a loss for words actually applied here as he chewed on each of his English words, shining them off to try and convey the emotion he was feeling. He thanked me for having us read it, and I returned his thanks by showing gratitude that he’d opened up to me. We then had a discussion about the Monkey King and other Chinese traditions.
Maybe this student reacted like this due to his cultural background, or just the break in routine. Maybe he subconsciously responded to an observation one student wrote down about technical comics: “Comic instructions seem to be easier to understand,” and “some could almost be multilingual.” Pictures, mythos, and symbols all seemed to work on this student in ways he was not expecting. While interesting, the reading section of my research is minor in comparison to the design element. After all, I am looking to see how comics can be used to promote visual literacy design. Perhaps, then, it’s more useful to look at written observations about producing comics like the one this student made: “I believe if done correctly, comics can make for the best learning tools and instructions.” The previous story is merely anecdotal, but the latter observation has written evidence to support it.

This chapter will primarily follow the structure of the question themes, with a few exceptions. Reading and Reading/Combination have combined into one section. The same has been done for Design and Design/Combination. The Combination theme only has one subcategory which has been eliminated entirely. Therefore, the sections will be Reading, Design, Reading/Design, and Reading/Design/Combination. Inside of these sections will be the overarching themes of Attitudes, Stance, Planning, Design, and Stance. No section will have all five overarching themes, but they will appear in the order written above with the topics that are irrelevant to the question being skipped over.

**Reading-specific Question Themes**

The reading-specific themes cover elements that students encountered in the reading section of the progymnasmata-approach to learning comics. While the cartoons section is interesting, it wasn’t relevant to the discussion so it won’t appear. Since the subcategories found in the Reading/Combo section are just extensions of the reading theme, I’ve included them in this category as well. The
remaining themes will be divided into the overarching themes of Attitudes Toward Reading Comics and Stance on Reading Comics.

**Attitudes Toward Reading Comics**

Reading comics was a new experience for many students, but most students had preconceived notions about comics. Because of this, their attitudes towards reading comics became a central theme. This section has three main sub-themes: *Comics Audience Expectations*, (which consists of my original coding themes of “just entertainment or superheroes” and “nerds/kids/funny/still childish”), *Comics’ Purpose Remains Unchanged* (which consists of my original coding themes of “still for entertainment (good or bad)” and “unchanged”), and *Genre Expansion to Technical Communication* (which consists of my original coding theme of the same name). After looking at students’ reactions I will combine them into the theme of Attitudes Toward Reading Comics.

*Comics Audience Expectations*

Students came with pre-packaged ideas of who they supposed consumers of comics were as well as what comics were supposed to be. Readers grappled with comics becoming more than just entertainment, funny, or dependent on superheroes and surpassing the presupposition that comics are either for nerds or children. The responses seem to follow three patterns: previous personal definitions, past definitions colliding with their new definitions, and expanding views of comics’ audience.

Around six students reflected on their previously held comics definitions. The responses range from “I originally thought comics just meant superheroes” or “as entertainment only” to “I used to think of comics as just what is in the newspaper or comic books”, or “I always only viewed comics as superheroes/newspaper strips” to “I originally thought of comics as entertainment only.” One response ends with “I realize they are a lot more.” Students were responding to the realization
they had that comics can serve more purposes than to entertain and can entertain in more varied fashion than they imagined, which leads into the next group.

At least four students discuss their paradigm shifts toward comics. One vague reply says that to him/her comics “are no longer viewed as being strictly for entertainment.” After saying that he/she used to think comics could “only be fun” one student writes, “comics can express international events to readers.” One writes that comics aren’t “just for entertainment’ but can “be beneficial as an educational tool.” One student thought that comics and superheroes were synonyms but now realizes “that comics can be used for any type of writing.” After realizing “that comics can serve more functions than entertainment alone” this student says, “they are much easier to create than I anticipated.” Creation of comics was a rare discussion in this question’s response. The student ends by saying that comics are “actually a really fun medium.” These reflections fit in with the critical composition goal.

A lot of students come into this research project with the assumption that comics are either for nerds, for kids, or for readers in search of a laugh. Technical comics help show that such isn’t the case and students and at least four students acknowledged this growth. One student writes, “before this class the perception that I had of comics was that they were for children, or only found in the funny section of the paper.” Another had a similar idea that comics had to be funny and writes that comics don’t have to be funny but can be part of any “genre such as information and instruction.” Another writes that they “can be more formal” and aren’t just used for jokes. A response to solidify this simply says, “comics don’t have to be funny.” Another response expands on some of these themes, “during the course of this semester I have gained a new appreciation for the functionality of the form and how it can be used w/more than just a humorous, four panel strip.”

A similar thread suggested that comics are childish, which was used negatively by one student and positively by a second. The first student writes, “The word itself still has a ‘childish’
nature to it.” The second student adds a more positive perspective, saying “comics are kind of juvenile in the sense that we always connect comics with kids, and even if that is true it doesn’t have to be a bad thing. We could just look at it as communicating to our younger more creative sides.” Our younger selves might be a better audience than our current ones and this concept fits in with Qualley’s idea of previous selves being others (139). However, for many students, their general concept of comics remained unchanged.

**Comics’ Purpose Remains Unchanged**

This theme comes from question two (“In what ways have [comics] remained the same?”) and features students who see comics as being mainly forms of entertainment or remaining unchanged in their opinion. Sometimes these replies were focused on the fact that comics can be educational but the entertainment forms still exist as these two do: “Some comics are still simple pulp fiction designed to be entertainment for people that prefer pictures over written word” and “I still feel the same about comics made for entertainment.” The tone here implies that pictures are inferior to words or that non-educational comics might be a lesser medium. A third student follows this pattern but has less judgment: “They are still defined as entertainment as one category of comics.”

At least six students view comics in the same light as when they began: “I still see them mostly for their superhero/graphic novel genres”, “Sunday newspaper[s]”, or “they can still be a little silly.” One participant writes that comics are mostly for comedic effect. One student writes that they “still don’t read newspaper comics” and that “example comics given for the class were lengthy at times and could become boring.” Others wouldn’t accept comics as a serious medium: “I still see comics’ medium as more of an entertainment medium than one that is used to distribute more important information.” Another adds: “Comics can be an entertainment or a very useful tool, but usually the document would be less serious with comics in it.” The idea of comics being
considered “less serious” is especially valid and would be something technical comics would continue to face.

For four students they responded that their viewpoint of comics remains unchanged—for positive or negative. One writes, “Comics are still pictures with words that tell a story.” Another says, “They remained the same in the sense of what I expect a comic to look like” which is “pages with lots of pictures and little text . . . for entertainment purposes.” Another student has a more positive spin on their unchanged nature: “They have remained unchanged in every other way—only the purpose of the comic has changed.” This might be a bit different than the other responses since it leaves some hope for the medium. The most positive response reads,” I always enjoyed plotting and drawing comics since young so I was pretty comfortable in using comics in this class.” While not part of my goal in teaching students visual literacy, their perceptions of comics’ capacity interest me and could be part of a different, albeit related, further study. One particular example of students’ expectations toward comics comes from their view of comics catering to technical communication.

**Genre Expectations to Technical Communication**

Students’ reacted to how many different genres fit comfortably inside the medium of comics. Their reasoning for this varied. Most that channeled this theme talked about technical comics in particular, but at times they just discussed their new understanding of the broadness of comics.

At times, the responses read as testaments to the comics medium in general—or as one student puts it: “I’m interested in them more now than I was before the class. I wasn’t aware they made technical comics, either.” One student focused on his/her previous knowledge of comics and how that perspective was broadened: “most of my experiences with comics have been through newspapers.” He/she continues about how the reading had broadened his/her knowledge: “The course has shown me types of comics I have not experienced before. Using comics to present technical information, like in the 9/11 Report, has expanded my view points of comics.” A third
student includes a caveat though: “In the right light, comics can aid in telling a story or helping the reader build a spatial concept of what the text is portraying.” This reluctance to accept the value of the medium is interesting.

The majority of these answers were very similar however. Most mentioned things like how they “did not realize their potential as a technical document”, how they “never really thought about comics being used as an effective instructional tool”, or how they were “not aware that comics could be used for instruction.” A handful of other students responded in a similar fashion.

A couple answers that offered unique perspective included responses that catered to my thesis. One writes, “My perceptions have changed in that I now think of comics as a means to portray something educational rather than just for entertainment issues.” Another discusses the science of comics: “McCloud’s work has opened my eyes to the, for lack of a better word, ‘science’ of comics.” Another student discusses the educational value: “I originally thought that comics were only just for entertainment, but now I feel that they can be beneficial as an educational tool.” One took it past education to daily use: “before I thought of comics as more recreational comic books, but now I can see the potential for use in everyday tasks.” Since these answers align with my goals, I hope they were sincere and not trying to please me, though, I’m not sure if I ever made any of these goals completely explicit.

Some students specified the technical nature of comics in general. One writes that comics are found in “technical documents” more “than what I previously thought.” Another writes, “I didn’t realize there were technical comics. The fact that comics served a purpose besides comedy and entertainment was news to me.” A third student, accustomed to “funny comics and not serious ones”, changed his viewpoint upon completing instructional comics. A fourth student expanded his/her definition to include instructions in his/her possession: “I had never thought of instructions that come with an item as comics.” One writes, “I hadn’t thought of comics as being a way to
instruct people, or really any other kind of communication outside that narrow mindset I had originally.” Another admits that “now I know that they can be used for different things like instructions.” One reply reads, “Throughout this course, I have learned how comics can be used as a means of communication and instruction and how they are not limited to just entertainment (pleasure reading).” A different reply writes that comics “can be very technical [and] used to teach.” The number of students that commented on the reading power of comics within technical communication was higher than I thought. More than a dozen students commented on how comics can be used in technical communication and most of their responses were positive in nature.

**Attitudes Toward Reading Comics**

A more thorough analysis will follow in chapter five, but it’s useful to tie up the Attitude Toward Reading Comics themes found in the reading categories. The most common element in the Attitudes Toward Reading Comics theme and subcategories is students grappling with an evolving definition of comics. Some refused to see comics’ potential for education or claimed that it had no power to educate. Many saw comics as a medium best left for children or for entertainment, while others began to believe comics could instruct and be tools for technical communication. Many students commented on their contrasting viewpoint of what comics are/were to them.

**Stance On Reading Comics**

Moving beyond attitudes comes students who opined about comics offered a Stance On Reading Comics. The questionnaire probed for students’ opinions and many obliged, providing insight into how they viewed reading comics. These stance themes are broken down into two main sub-themes: **Reading Comics Aids Readers** (which consists of my original coding categories of “comics strengths”, “effective”, and “empathy by participating”) and **Comics’ Worth Questionable** (which consists of my original coding categories of “comics weaknesses” and “big picture vs. details”). After looking at students’ reactions I will combine them into the theme of Stance On Reading Comics.
**Reading Comics Aids Readers**

Many students responded to what they found to be comics’ strengths. Their responses included pictures’ strength, comics transcending borders, extensive definitions, engagement, comics effectiveness, and gaining empathy by participating.

For at least three students, the main strength in comics is their pictures. One student writes that they “give an easy visual” while another adds, “I think it is easier to understand comics because it shows picture examples for each step.” That statement is interesting but confusing since other instructions do that as well. One student refers to it being “easier to instruct with the comics, because there were already pictures to get you half way there. However, it was also difficult because the illustrations themselves can be frustrating.” Whether this student did the hunt-and-find method or another approach is unclear.

At least three students refer to comics’ ability to seemingly transcendent language and genre. One student writes, “In traditional instructions, people can know more details about the process and they can imagine the scenes by themselves. In comics, they are easier to understand, even . . . for kids who don’t recognize many words.” While not explicitly saying so, this response points out comics’ ability to transcend languages. Proof of this efficacy can be found in Ikea’s diluted comics format used in their worldwide furniture instructions. Another student first points out that “the comic form can be distracting” and that “for some of the comic instructions you can get lost and not follow instructions.” On the other hand he/she writes, “comics were often very helpful and they generally put things in an easier way to understand because it is like having someone teach it to you instead of just reading up on how to do something.” Perhaps this statement refers to the narrator aspect or to something else entirely. Another response that fell in this transcendence-in-narration idea came from the previously mentioned quotation: “Comic instructions seem to be easier to understand, some could almost be multi-lingual.” I love this multi-lingual response because it taps
into comics’ capacity to teach students in a visual and textual way that seems to transcend expectations and norms. My first response to comics was similar and it began my quest to see what affordances lie in technical comics.

At least two responses are quite thorough in their definition but a little more difficult to categorize. One participant first admits, “Traditional instructions were wordier, requiring a little more effort to follow.” Then clarifies, “If following the comic instructions didn’t achieve the desired result, the traditional instructions were better for troubleshooting since they could explicitly guide you through the process to achieve the goal.” Finally he/she adds, “This wasn’t too common, though, since a pictorial depiction of the process is typically easier to grasp.” A second student believes that “comics have greater potential for instructions as a whole.” He/she adds, “being able to see what the steps are can be extremely helpful.” However, she/he admits, “sometimes it’s necessary to use more text in a very in depth description [sic].” While this response is interesting, I must point out that other instruction genres follow this pattern too. Perhaps what stood out to this student in comparison to other instructional genres was the engaging power and storyline quality comics possess.

Comics can be engaging to the reader, which is both good and bad to some students. One student admits, “Traditional instructions were in some aspects easier to follow because they follow a very plain and rigid format (i.e., numbering steps) but they can be quite boring.” To counter this, he/she writes “comics provided a more effective way of engaging the reader and kept me reading the instructions all the way through.” One student likes the “straightforward” nature of comics, which makes “it easier to complete a task efficiently and without distraction.” She/he writes “comic books could also add to efficiency for some processes because of the very helpful visual aid they provided” and “comics were more ‘entertaining’ and made the process more interesting to me.”

That said, he/she writes “since comics do add another layer of communication through the graphics,
it could potentially make a process longer than it would be if the user was just reading text.” One
student found “both methods teach instruction” and specifically mentions Will Eisner’s work being
equal with other formats, but adds, “I enjoyed Will Eisner more.” One simple answer says comics
“is more interesting than traditional” instructions. Most readers of instructions are not looking to be
entertained, but there exists an audience for documents that marry descriptions and instructions
where this could pay off. The Howtoons books I used in my study are a good example of this. For
children, instructions seem to fit better inside a storyline and Howtoons caters to this Scott McCloud’s
Google Chrome instruction/description/introduction (perhaps the genre could be named
introstruction) works nicely as a way of engaging the reader while introducing a new topic and
simultaneously instructing her.

While many students felt that comics achieved certain purposes better than other mediums,
a few chose to use the word “efficient” and spoke to comics’ efficacy in question six (“In studying
comics this semester what differences did you find between our traditional instructions and the
comics, such as those by Will Eisner and Scott McCloud?”). A student writes, “I realized they are
very effective for getting points across” which seems to reflect others who responded this way. One
student gives his/her story: “I used to read the Sunday comics as a child, but then got tired of them
and considered them a waste of time. I read xkcd for its wit, but that was about it. Now I see how
they can be used in a practical sense as an effective way of instruction or demonstration.” The xkcd
comic is an extremely popular web-comic that deals with technical issues and has a large following
with frequent appearances on social networking websites. I frequently incorporate it during my
introduction to the topic. One student claims that comics “are an excellent way of telling stories,
different from the norm.” A loftier claim from a student reads: “I realize that comics can be a useful
way to convey a message that is different from a standard text based method.” The effectiveness of
comics is extremely debatable, but for these students in particular it seemed to cater to their needs.
The final variation of this theme comes from two students learning to appreciate reading comic by having produced one. One student writes, “My perception has changed because I made a comic and saw that one can be educational.” Another expands, “When I started the class I had a very ‘old-fashioned’ view of comics. Now, I am able to see them in a new light and have used the medium to create instructions.” Creation and writing often helps students solidify theory, so this type of response seems to validate composition theory. We often better appreciate writing more when we engage in the production of it.

Whether students commented on the effectiveness and genre-bending capacity of comics, students’ appreciation for the medium being solidified by participating in it, or comics’ efficacy many students responded to the positive nature they gleaned from reading comics. For some the experience wasn’t as valuable.

**Comics’ Worth Questionable**

While the majority of the responses in this subtheme of students wondering about comics’ efficacy or worth weren’t make-or-break observations, they add valuable counter-claims to the positive aspects listed above. For this section, the responses fit under the categories of straight words being advantageous, the tangible vs. abstract in comics, the big picture vs. details in comics, and being entertaining while not necessarily useful.

Words are still more advantageous for at least three students. A student focused on safety potential states, “Words can provide more safety or important problems not seen in a picture.” Another expands on this: “Portraying situations that may be too hazardous for humans to do” could be done by “snap[ping] a picture of and animating inanimate objects.” While this reply is a bit confusing, I believe he/she refers to the concern of a deadly risk being represented in a cartoonish fashion could be inappropriate or even dangerous. One student responds to words and pictures in
general: “Traditional instructions often explain in words something in more detail which for some objects can be more useful whereas comics rely more on images which is useful for other things.”

Other responses focus on the tangible vs. the abstract and comics’ role in portraying the two. The general consensus comes down to “Instructions for making or assembling something were easier to follow in comic form, more abstract things were easier in traditional form.” Another reply gives a specific example: “It was easier to understand numbers and conceptual things with traditional instructions, while comics were much easier to visualize the process or how something needed to work.” Another student writes, “when no visuals were needed to communicate the instructions, the comics ‘cluttered’ up the communication channel.” The same student also points out that visuals and diagrams seem to work better in comics form. Another student adds, “Traditional instructions are more attuned to inanimate instruction that cannot be readily depicted in the real world” and “comics can more directly describe [an] imitational direction.” Another writes, “they are primarily suited for more visual tasks, such as instructions for tasks you can see (for example recipes, construction)” and wouldn’t “work that well for highly technical applications, or at least it would take a lot of work to make it happen.” This concept fascinates me, especially since five different students responded in this fashion with no prodding or discussion on my part.

Similar to the tangible vs. abstract cluster, students commented on a big picture vs. details in comics. The idea stems from students’ observations that comics seem to excel at focusing on the big picture, whereas traditional technical documents are able to showcase details more effectively, or as one participant writes, “Traditional instruction are more detailed but comics provide a better picture.” A second student writes, “Elaborating on details was much easier to accomplish with traditional instructions. For example, describing heavily scientific concepts can often be done more easily with text. Instructions that asked you to DO things were more suited for comics.” This student seems to be suggesting that descriptions and definitions might be better suited for traditional
texts while comics are better suited for a how-to manual. This observation shows up in other students’ responses too: “while comics are better at explaining ‘big picture’ they [sometimes] have a hard time explaining specific details.” Another writes something similar: “traditional instructions tend to be a lot more specific, but sometimes the ‘big picture’ of what’s going on is lost.” Only one student explains why that might be: “In the ones by Will [Eisner] and Scott [McCloud] the ‘big picture’ held more mental permanence (often because of the storylines) but the specific details of the steps felt glossed over.” Maybe other students felt that the storylines were vital for the big picture, which is why comics seemed to be more effective in this role.

Sometimes comics were entertaining to readers but not necessarily useful. One student found “the process was easier to understand when using the traditional style of instructions because everything was laid out in order” but “the comic-style instructions [were] more interesting to read and follow, but sometimes it got hard to find steps because of the images.” One student puts it more succinctly: “comics that framed the instructions within a story were more compelling than traditional instructions and ‘stickier’ in the mind”, admitting that “They are probably best for selling the ideas of doing something while also teaching it.” This student also argues that “traditional instructions, however, will probably remain my go-to when I already know that I want to accomplish the specific task and want only the information I need to complete it.” This is fair enough.

Especially since the goal was to teach visuals not to teach students to use comics as instructional material. One student writes that comics is “a very visual method of communication and still seems a little pointless considering the ease of videos today.” This answer came from the group that didn’t do the adaptation, so I’m not sure if this played into the student’s response—perhaps she/he assumed I was teaching this as the *only* way to compose instructions. But, the thought that videos have replaced all other formats of instructions is a belief that’s probably held by many due to the popularity of instructional videos on YouTube and sites like Lynda.com.


Stances Toward Reading Comics

The most common element in this theme and subcategories is students commenting on whether comics are more effective as learning tools than conventional approaches. Students brought up interesting stances on the subject such as comics might be too cartoonish to convey dangerous information, important information, or both. In a similar vein, abstract concepts were deemed to be too complicated to be portrayed in comics, according to some students. While some conceded that comics has potential, others garnered more trust in the medium by composing in it. A few students found the artwork beneficial and more efficient than traditional formats. Some students found that the style transcended genres.

Design-specific Question Themes

The design-specific questions had three overarching themes—the most of any category. While the subcategories of other’s images and same as question three were valuable, they didn’t further the study and have been eliminated from the discussion here. Similarly to the Reading/Combo theme that was combined with the Reading-specific questions, the Design/Combo theme has been combined here because it was just an extension of the design-theme questions. It includes the Planning Comics theme, which was unique to the design-specific questions, as well as Design Obstacles and Final Product Observations.

Planning Comics

The Planning Comics theme covers all the comments students made relating to planning. It is subdivided into General Planning Comments (which consists of my original coding category of “planning”) and Plans Were Better than the Finished Product (which consists of my original coding category of the same name). Planning is vital for any project; therefore seeing a planning theme
emerge wasn’t surprising. While shorter than the other themes, it bears dissection because it offers interesting insights that parallel writing studies responses to the difficulty of planning.

**General Planning Comments**

Any writer faces the difficult task of planning and for the budding comics artists in my technical communication class this project wasn’t any different. For most, the planning process was difficult, as expressed by this student “The most difficult aspect was the planning stages.” Yet for others planning was a rewarding—and even fun—process. Whether the planning was any more difficult or any easier than regular planning is hard to judge. The comments here followed the patterns of planning for comics is easier, time consumed planning, and choosing a topic.

Those that enjoyed the planning process of comics believed that the process was easier than regular composition. One student writes, “I thought that coming up with an overall idea for the comic was simpler.” Another argues that the simplest aspect of creating comics was “Planning, organizing information, and deciding how to lay the information out.” A student writes that the “planning process of the comic was more helpful to me than traditional drafting process.” For these three students, planning was easier than regular composition; for others it became more time consuming.

Many commented on the time-consuming nature of planning. Some were surprised by the amount of time needed to plan, even calling it “an artistic process.” A respondent writes this in a more personal matter: “The biggest surprise was how much time it took to plan the comics before actually drawing the comics.” Another commenter writes something curious, she/he observes: the “planning part for comic is always the tough part.” The way that it’s written it sounds like that respondent has experience in writing other comics.

Others stalled out before the planning even began. When asked what part was the most difficult, one student responded with, “Choosing a topic, haha.” Another writes, “The most difficult
aspect was thinking of an idea to do for my comic that could also be portrayed.” The early stages weren’t necessarily eased or complicated if students created comics only or those that merely adapted their previous instructions into a comics form. This participant had a similar feeling: “Creating the topic that could be conveyed in a comic format” was the most difficult aspect. One respondent says, “You had all the information for the comic since you were using a previous assignment but then you needed to come up with a way to make it interesting . . . and incorporate a lot of images.” Most of these responses mirror students’ responses toward other writing assignments, but the students who found planning comics easier or more exhaustive seem to showcase a slightly different response that could be worth further exploration.

**Plans Were Better Than the Finished Product**

A slight variation of the planning theme occurred when students mentioned that their plans were more grandiose than their finished product: “I found ‘drawing’ my characters to have proper expressions, body movements, and other visual aspects to be just like in my mind, more difficult than originally expected.” A student who used the hunt and find image method responded similarly: “What I found most difficult was choosing images and sizing them. This is because when I made the comic the images were one size and when the same comic was opened in a PDF the images were a different size and looked like they had low resolutions.” Such a feeling is common in all forms of design and writing.

Students realized that planning for comics can be a hefty challenge, and it forced them to consider new ways of writing. For some, this process was actually easier than regular writing. Most planning concerns are the same as regular writing challenges—creating a topic for example. Many students found the amount of writing for a comic was surprisingly high. Students also found their plans didn’t always match their product.
Design Obstacles

Design Obstacles is the name given to answers that related to the production of comics. While obstacles sounds negative, not all the answers were inherently negative. Instead, the themes deals more with hiccups and learning curves students faced as they designed their comics. This section covers three subcategories of Organization Milestones (which includes my original coding categories of “design/organization” and “new medium”), Comics Elements (which includes my original coding categories of “narrator”, “tone”, and “core writing”), and Software Elements (which includes my original coding category of the same name). I will conclude it by connecting them.

**Organization Milestones**

Organization and design responses emerged from students that commented on the literal layout of the comic strips, but not in a software or artistic fashion. This subtheme is very similar to the juxtaposition category but differs slightly in that I found these responses focused more on the hands-on aspect of creating the comics, where the juxtaposition theme was more about the theoretical implications. Most responses in this category fall under the topics of layout ease, layout problems, layout planning, and new medium growing pains.

Two students found the layout the easiest part of the design, as they felt that creating a flow was easier with panels instead of transitions. As one observed, “the layout is easier than what I expect [sic].” Another one suggested that “making points” was easier with layout.

The majority in this theme found the design to be the part they struggled with the most, with many even saying that layout and structure was the hardest part. They worried about how “how different pictures and drawings were going to fit on a page” and finding “An easy way to organize the comics exactly how I wanted.” One laments that not only did the designer have to worry about each panel but how they interacted and were cut off by page breaks: “I found the organization sometimes tough because you want your information for one section to generally flow in one page.”
The same student added, “Well, how long it took to organize my text and illustrations to fit onto pages in a logical manner was a very painful multi-hour endeavor. That was surprising.” After the comic was designed one change could ruin it too: “I think that the hardest part is completing a panel and then seeing that it doesn’t look quite right. I did a lot of tinkering and small adjustments to get it looking good.” These organizational issues are actually beneficial, as I will show in chapter five.

Some pointed to the “thought process behind the layout” to be harder than the actual creation. One mentions that planning was difficult “because as elements change and things are added/subtracted” the documents become more complex. Another commented that the hard part was the “Illustration and fitting certain panels on certain pages. It was difficult to plan ahead to how everything would fit when formatting on the computer.” Some were just worried about “making it look good/stylish”, with one commenting that the toughest aspect was “making the images fit the comic style, and getting the text to fit inside the panel with the image.” Thinking visually is one of the main goals of this project and these troubleshooting comments show that students are on the right path.

Others commented on the difficulty in getting the pictures and text boxes to work together as a design. One writes, “I thought formatting the pictures was the most difficult part.” Another adds, “I thought it was difficult to get text boxes to match pictures” with another pointing out the separation of panels was tough and deciding on “how many words is too much” while another fretted with “Separating the panels.” A blunt response reads, “organizing all the illustrations and text boxes into pages was the most irritating thing. The standard paper aspect ratio was hard to work with, margins were a mess, and it was hard to know when a specific step needed more than one page, or if I somehow needed to shrink down my images.” One student admits the same about their software choice: “This was due to the program I was using to format this.” What’s interesting about these responses is the insistence of students using software that isn’t made to work with comics,
which will be brought up more in the software theme section. However, one student counters this by admitting that it would have been even harder to achieve “had the pictures been required to be hand drawn.” Therefore, maybe the software or design fashion doesn’t ease or complicate the process. Hand drawing was not a requirement, but some chose to use it with varying success.

The new medium of comics caused at least five students to suffer growing pains as they dealt with a new way of writing and designing. As one student says succinctly, “The hardest part was making the switch from text based story telling to visual based story telling.” The results aren’t necessarily completely negative (although some are) and often have more of an observational feel to them such as, “Never done much of this before.” Adjusting to anything new can be difficult and these responses reflect that. One writes, “it was hard transitioning from one style of paper to the comic” and another adds, “It’s a new medium which takes getting used to like any. Artistry can be time-consuming.” The main concern seemed to be that of art is hard, or as one participant writes, “I am not that creative . . . [and] am not used to not writing a project out if it is not in essay form.”

These are all perfectly normal concerns for students to bring up. One interesting insight is students’ responses in this paragraph aren’t too different from what an instructor would hear in a traditional technical communication course.

**Comics Elements**

Comics elements consist of certain writing strategies that comics caters to in a unique fashion that may not be found in other visual rhetoric mediums. While teaching visual literacy through comics teaches various concepts found in visual rhetoric, the visual lessons learned in this section could be unique to comics. Because of this they bear weight for analysis purposes. This section discusses the use of a narrator in comics, the tone used in comics, and core writing.

Some students were concerned with the narrator of their comics, as this is an issue many creators grapple with in technical comics. Does one take the popular Scott McCloud approach of
having an avatar narrator or a more third-person omniscient approach like in The 9/11 Report? One student writes, “It is difficult to get a narrator for instructions” but adds “I don’t think a narrator is necessary.” Another response takes the opposite approach: “at first it was difficult for me to link all of the panels together to create a complete ‘story’, but this was remedied by creating a narrator for the instructions.” One writes, “Figuring out how best to present the information—what narrator and tone to use.” In creating an academic comic for Digital Humanities Quarterly, I’ve been faced with the same dilemma with the editors suggesting the third-person approach. Maybe encouraging this in the future will help students. Additionally, some of the examples we used in class, mainly the Soldering Is Easy and the 9/11 Report were presented in entirely third person and McCloud’s Google Chrome introstruction switches narrators in each panel.

Trying to get the right tone in technical communication challenged many writers and students. One student writes of the struggle in realizing comics don’t “need to be funny” while another student who never realized this writes, “formatting the story to get punchlines to occur in the last panel of a row [sic]” was challenging. Add these together and the theme of students grappling with their tone makes a lot of sense.

One of the difficult aspects was finding “a happy medium between the technical/serious nature of the topic and a light hearted, lighter side to portray in the comic.” As one student writes, “Comics tend to be less dry than traditional texts” and “is more of a work of art.” A student defines the difference nicely, “The tone in comics is broader in how you can approach it. Traditional texts tend to be formal and not stray.” Some students suggested that traditional texts “seem more formal and comics are more personal” and those traditional texts “use appropriate language (educated) with comics there is a little more of a conversational tone.” But as others pointed out, this conversational tone can be beneficial.
“Being able to write more conversationally” was one student’s favorite aspect of the comics. This could be because “the topic discussed has to really be much more simple to use comics”, as one student suggests or because the process itself was easier. One writes, “It was easier for me to present technical instructions in a more informal way. Specifically, I found that it was easier to provide feedback throughout the process and also to make aside comments that served as helpful tips or reminders.” The tone in technical communication is usually of an invisible writer. However, some recent trends in instructions have embraced more playful tones (e.g., the Mini Cooper). Any exercise that has students flex their ability to address tone can be useful.

Comics encouraged students to get right to the core of their message, or as one student writes, “you cut out a lot of the ‘fluff’ in writing. In the comic adaptation, you focused on getting the core message across.” This response represents the gist of these responses: getting past the lengthy approach to writing in order to create a central core message.

Students seemed to have a couple of concerns with core writing, but most weren’t too negative, with the exception of a few generalized complaints about the core writing process. One student expressed their nihilistic viewpoint, “nothing surprised me I knew it was going to be difficult for myself.” This was a minority perspective among the dozen who responded to this theme, as most students had specific concerns such as “Simplifying it for comic use but having it still contain a lot of details” or “Figuring out what to do the comic over because I needed something fairly simple to fulfill the requirements with not a lot of steps.” One writer responds, “The hardest part was making sure I had enough text on each page, but not too much. I wanted to be detailed, but I didn’t want to cover each page in words.” This type of complication is common for students who are considering making a document instead of just a paper.

One consistent aspect of students who responded with a core-writing message was the difficulty in adjusting to panels and the core writing involved. One student writes that the toughest
part was figuring out how to “limit description or dialog bubbles into a panel of comics.” Others write that “how much to convey in each panel” and “how many words is too much” was their hard part. Another student comments their surprise in the difficulty in trying to “contain each panel to one specific idea or topic” and “keep each panel to one specific step.” But another points out just how much information one could actually fit: “The surprising part to me was how much dialogue you could fit on one page or panel. I know comics are less text based than novels, but there is still lots of text that can be used in a comic.” Panels are a powerful tool in helping students both condense material and expand on it.

Planning on writing in a condensed fashion interested others. One writes, “finding a way to . . . take a long paper and find the major points in it and then find a way to incorporate it into a comic and make it a story” was the biggest challenge. Another mentions the most difficult aspect was “The thought process of what to put and what to leave out.” The more graphical nature of the planning stood out to others. One mentions that he/she had “to narrow my ideas down to the core message I wanted to communicate.” Another student mentioned something similar, pointing out “Since primary and secondary school have prepared me for essayistic writing, ensuring that details were not duplicated between the written and graphical ideas became difficult.” These concerns are to be expected. For other students the issue came in getting the right length: “I wanted to add in many more steps and explain more detail in writing but I couldn’t because then it would become too messy.” This is often true of technical documentation where conciseness is key and little tolerance exists for extra words.

Others found the core writing strategy advantageous. Speaking of comics in general, one student writes that he/she was “able to provide the same information as the traditional texts with much less words (and more graphics).” Another had a similar visual experience by mentioning “the value of using visuals in space or length limited writing.” More visuals leads to “Fewer words needed
because of the graphics” which some enjoyed. One writes, “Getting the wording right seemed simpler, since there were graphical ‘stories’ to aid.” While one student admits that “there were actually content aspects that I felt came across easier to communicate, just because of the visual nature of the comic.” The visual nature simplified for some while it complicated the matter for others.

**Software Elements**

A big section of creating comics involves in what method students will use to create them: should students hand-draw them? should they use software? should it be digitalized? Since digital divide was important to me, I decided I would offer students various options for creating their work. However, since they did have access to professional software and hardware on campus, the final product had to be digitalized. Because of this a theme involving software emerged covering students’ preference for certain software, dislike of other software, or other digital hardships. The surprising aspect was how many positive software responses emerged.

The first aspect that surprised students was the capacity to draw comics online. Students pointed out that it was both the most difficult aspect while at the same time they were amazed at the “availability of cartoon [sic] software” and “comics program[s].” Others expressed similar reactions or others were more specific in their praise of certain software. I recommended a few in class and two seemed to interest students: Pixton and Comic Life 2.

At least eight students mentioned a specific appreciation of Pixton. One writes of his decision process, “The hardest part was deciding on which software to actually construct the comic.” Another mentioned that the most difficult aspect of the assignment was “Finding a user-friendly software.” Those that found Pixton seemed to really enjoy it: “I ended up paying money for a Pixton account, which ended up being some of the best 8 dollars I’ve ever spent.” Another writes simply, “Pixton is great!” One student even suggests that I should get “a class license for Pixton and
use comics for a whole semester.” A very insightful comment comes from a student worried about creating a lengthy piece “which was hard to find in a free piece of software.” Costs concerned me with this assignment, so I’m glad this was brought up. However, the undecided student decided on Pixton, writing, “Pixton provided excellent tools but also cost money to have the features I needed. I couldn’t figure out a way to do a free trial of the features I needed so I just paid for it. Worth it!” While Pixton can be used for free, most students who mentioned it were those that purchased an account. A student tells his story: “It was a lot easier than I expected (once I started using Pixton. Stripgenerator was a lot of work, and actually screwed up the first page I finished, hence the change to Pixton.)” That student mentioned purchasing Pixton as well. One nice thing about Comic Life 2 was it offered a one-month free trial, which other students took advantage of.

Around six students mentioned Comic Life 2 in particular. One student called Comic Life 2 “surprisingly easy” with another saying “the ease of Comic Life 2 surprised me” and one saying it “was much easier to use than I thought.” One student called it “a great program” with another claiming that it “was iffy.” One writes, “I found it to be easier to make a comic than I thought it would be”, claiming that Comic Life 2 “had a lot to do with this.” One wondered if the ease of use was because of Comic Life 2 or just the fact that “the comics I made were very simple to illustrate and I didn’t have any complicated visual works to produce.”

Another student commented on the benefit in exploring new software in general. “Composing my comic lead me to explore Comic Life 2, which of course brought with it a different approach to composition and arrangement than, say, Microsoft Word.” One student in particular did use Microsoft Word and wrote it was a “very painful multi-hour endeavor” and admits, “not using MS Word probably would have helped.” Others had similar reactions: “The standard paper aspect ratio was hard to work with, margins were a mess, and it was hard to know when a specific step needed more than one page, or if I somehow needed to shrink down my images.” Another
empathized, “when I made the comic the images were one size and when the same comic was opened in a PDF the images were a different size and looked like they had low resolutions.” Another simply mentions that “Saving it to a PDF and uploading it to Moodle” was the most troubling part.

Some abandoned the online software for methods like hand-drawing or using professional software. One writes, “Using online software was pretty stressful” because “there was always the worry of losing Internet [sic] connection mid-construct.” One student writes, “I found that it is more difficult to use the software to create the comic than drawing.” Another adds, “The comics assignment was very interesting and somewhat fun, but it was quite tedious trying to draw it and the online software was not helpful for what I needed to illustrate.” This led to one adventurous soul using InDesign: “I had to overcome the hand drawing and layout on InDesign.” Even with the hand-drawn methods and concerns with drawing, it still led to positive results, or as one student writes, comics “started looking good much earlier than traditional papers (which take like 7 paragraphs before you feel like you’ve accomplished anything).” Creating one panel done was enough to motivate the writers to continue; a completed panel satisfies in a way that a paragraph may not.

Software was a major component in the comics experiment since students had to rely on some form of software no matter what technique they chose. It was useful to learn that many of the free software seemed to help readers as much as professional software. Drawing comics by hand seemed to not be a problem for those interested. Those that relied on familiar software that didn’t perform as well seemed to plague a few students. Responses like these are what many interested in teaching software seek: the ability to problem-solve in software and explore new techniques.
Designing Comics as a Whole

This section in particular will be dissected in chapter five as it offers many fascinating insights into the creation process. Mainly, students felt growing pains in adapting a new medium for writing purposes. They found they had to get to the core of their message quicker and interweave images. They struggled with the narrator aspect of the story and getting the correct tone. Many had positive experiences doing this as well. Much thought went into the chosen software and approach students made when creating their comics. Many of the responses in this section showcase the unique capacity comics has to teach visual rhetoric through multimodal methods, namely that of teaching writers the skills of narrowing their message to its central theme while allowing students to explore production methods through low-tech and high tech production means.

Final Product Observations

Students commented on the elements of their finished comics product, which led to this theme’s emergence. This section includes the three subcategories: Ease of Medium (which includes my original coding categories of Art Is Easy and Product Exceeds Expectations), Time Issues (which includes my original coding categories of Time-consuming and Revision), and Visuality (which includes my original coding categories of Creativity and Visual Learner). I will conclude this section by connecting the three themes.

Ease of Medium

This subcategory surprised me the most: students who found the artistic elements of comics production to be simple. It’s surprising because I expected primarily resistance to the artistic side of the creation but hadn’t considered that many students would actually enjoy the art they used to create their work. I had assumed that engineering-dominated students wouldn’t be interested in art. However, I hadn’t considered the extensive CAD work and exploding diagram design they were familiar with that may have contributed to their enjoyment. The responses follow the patterns of art
better than words, art being more entertaining than writing, and students who found the finished product better than they had hoped.

Some students enjoyed the process of comics production and found it more effective than regular writing. One student writes, “You can eliminate much of your normal text through the use of pictures.” Another adds, “You can draw a picture to illustrate what is happening instead of finding words to describe a situation.” One even wrote that “Incorporating text and pictures to tell a common theme or story” was the easiest part of the process. Another student writes about the process of “writing” being easier with images, “In a sense writing was also easier since much of it was replaced by imagery.” A more specific response was, “You can draw a picture to illustrate what is happening instead of finding words to describe a situation.” The same applied to describing actions, “When you try to describe a movement, to use comics is much simpler than words.”

Another emerging idea was students’ desire for drawing over writing in all stages of the process. One writes, “Creation of comics was quite simple since it allows more visualization within the outline compared to a papers outline [sic].” Another adds to this, “I’d prefer drawing over writing any day…” One simply replied that creating pictures was the easiest part of the process.

Some students were surprised by the quality of their finished product. One writes, “I liked the final product more than I thought I would.” Another says, “I was surprised by how well my panels came together. I had a good vision of what I wanted each panel to look like, and for the most part, they turned out just as I had hoped.” One writes how surprised they were by “how much I liked the outcome of my project.” That same student writes that they “put in way more effort and work then I would have in a normal essay” which might affect their resulting product.

These various responses showcase that in each classroom there are students interested in exploring different types of writing and catering to them can enable them to showcase their writing and design potential.
**Time Issues**

Responses related directly to the amount of time involved in creating comics appear here. This subtheme is simple and short and consists of the time-consuming nature of comics production and the belief that revising in comics is actually easier than regular writing.

When asked “Did anything surprise you about the process? If so, what?” many students mentioned the time-consuming nature of the project. One writes, “how long it took to organize my text and illustrations to fit onto pages in a logical manner was a very painful multi-hour endeavor. That was surprising.” One writes that putting pictures together took “more time than I thought” it would. One writes there were no surprises but the project “took some time to actually create it.” This student writes, “It surprised me that the process to create a comic could actually take as long as it did” even though “I didn’t draw my panels by hand (which could’ve taken longer, or shorter) but instead used an online free program which still took time to tweak the characters in.” Multimodal assignments often surprise students in the amount of time they take to create. The idea of making a comic or filming a video seems like an easy-out to students but they find that the writing and work involved often surpasses a traditional writing assignment.

At least two students mentioned the ease in revision. One writes, “Editing for sure. As long as you kept it clear cut, there wasn’t a ton of text to read, fix, re-read, polish, have a friend read, then fix again.” Another responds, “revision of the comic was simpler” because “There was less text and I always have lots of issues with grammar and spelling. It was much easier to see if there was something wrong with the format or flow of the images as compare to written text [sic].” In my mind, I thought that the revision of comics would be more intense, but these students indicate otherwise. Since only two responded like this however, which might indicate that revision is simpler in comics. On the other hand, there was no prodding these students to bring up editing.
**Visuality**

These responses fit under student responses that subscribed to the notion of visual learning. These results are tied into students enjoying the creative freedom the assignment allotted as well as positive and negative interpretations of the idea of visual learners.

A few students expressed joy in having the chance to be creative. Creativity is a value that some students enjoy more than others of course, but some students liked the freedom the assignment gave. One writes, “It was nice being able to use some creativity in a technical communication class.” For one student this creativity manifested itself in the visuals, as he/she writes “I could use more visuals to communicate my ideas.” Another student writes that the process was “Very simple, more focused on content and less on rules (no word count, page limit, etc.).” Creativity may have been more appreciated by students than this amount shows since its aspects were swallowed up in other categories.

The concept of visual learner was difficult for some because as one student writes, “Stretching one’s mind to be graphically oriented when previously this has been unuseful [sic] in my studies” is not simple. One student admits “It is really hard to make comics if you aren’t a visual learner.” This idea was expressed by another student as well: “The artistic aspect of comics are [sic] hard for me to grasp because I struggle in using visual art to communicate ideas.” Others had a more positive spin on visual learning. One student explains, “When I actually sat down to make the comic the visuals came very naturally with the text; a proper mindset of communicating visually is all that is needed to do it well.” Another student admits it was difficult but adds “it was good to see this out of the box approach to communication.” This response admits that it “depends on your personality.” She/he expands on this: “I liked using the comics over traditional instructions because they were more graphic based and I think I am a visual learner.” The amount of stock one takes in
visually learning is up for debate, but for these students it was either a reason for success or for the
difficulty of the task.

**Comics Products as a Whole**

This section is the one that surprised me the most. Some students felt that the revision
process of their completed document was simpler in comics, and many believed their product
exceeded their expectations. Some students found the process time-consuming but others felt that
editing and revising in the medium was easier. For those artistically inclined or self-labeled as visual
learners, the process came easier and was an enjoyable one. The opposite seemed to be true for
those who don’t label themselves as such. Many participants were surprised by the amount of time it
took to compose comics.

**Reading/Design/Combination Themes**

This category is the largest. Since Reading/Design is just an extension of
Reading/Design/Combination, I have merged them into one section. Because these themes
appeared on each category of question these responses seem to incorporate more universal ideas.
That said, three of the subcategory themes of *nothing, other, and unsure* are not discussed in this
section due to them not contributing much to the discussion at hand. This section includes the
themes of Design Obstacles as well as Stance on Designing and Reading Comics

**Design Obstacles**

This section combines four subcategories: *Writing Elements* (which includes my original
coding categories of “writing issues and elements” and “story”), *Difficulty of Art* (which includes my
original coding category of the same name), *Medium Issues and Elements* (which includes my original
coding categories of “color capacity”, “medium elements”, and “transitions”), and *Juxtaposition
Elements* (which includes my original coding category of the same name). I will conclude it by looking
at how they interrelate to form the Design Obstacles theme.
Writing Elements

This section focuses on responses that related to the process of writing comics. The main categories include initiating writing, using text correctly, broad writing observations, less writing, writing in the medium, writing amounts, and storyline.

Some concerns students expressed focused on the initial writing aspects. One student says “writing the script” was the hardest part. Other students commented on the script being difficult as well, or at least aspects of it. One student says, “a bad script may confuse the audience” and another adds that the “The dialog is most difficult aspect.” A sarcastic answer points out the obvious that the difference between comics and traditional instructional material was “drawing and writing.” A more thoughtful response points out that “choosing concise, effective words is the most difficult part of designing a comic.” Another responds, “Because of short, concise wording, the writing of the ‘script’ for the comic was easier than in a regular composition…” Not all writing aspects that students mentioned belonged to just the drafting stages.

Three students commented on how writing for graphic accompaniment was a challenge. The first writes, “finding a reader friendly way to structure” the comic could be difficult. On those lines, an astute response suggests “keeping it simple” because “often we think more is needed to inform.” Once the drawing started, it was pointed out that “keeping text from dominating the panels and using too much text” was a challenge. On this same logic, “Using language to show, as opposed to tell & determining appropriate drawings” became a necessity in design.

Some students pointed out broad writing observations like “it was more work than I had anticipated” and “Traditional instructions have to be considerably more descriptive as there is not an accompanying visual with each step.” While others focused on specific details in writing, such as feeling that the “hardest part was ending the comic without it ending abruptly.” The student continues, “When I was completing my comic I had trouble thinking of a way that didn’t leave the
reading [sic] wanting more.” The responder wanted to create a cliffhanger aspect to the comic—a common device used in comics. Another student mentions, “emotions are little bit more difficult to be expressed in comics.” An interesting thought, but a vague one—more info would be helpful on this.

One element that students seemed to appreciate involved comics having less written words. One student writes, “It required much lest textual work [sic]. Actions could easily be displayed using characters in the comic.” Another mentions the “text could be simplified” and comics features “less writing per page.” On this same thread, one writes, “The word choices were easier” and it’s “less complex.” This is echoed in one student’s response that “the lack of words compared to a typical paper” was better than in a regular composition. Another students likes that in reading comics “it wasn’t just a giant essay but it had pictures to help the story along so the text could be more simplified.” Reading helped others out too because “Most had very few words, and were easy to follow and understand with the pictures.” That same notion in writing was represented by one student claiming that “grammar, and writing were simpler.” Another says, “The language used in the comics is simpler.” Ones student says an advantage to writing comics is “you can eliminate much of your normal text through the use of pictures.”

Others focused on the writing aspects for more medium-based benefits. One student claims that comics is better for “describing how to do certain processes, shapes, layouts, patterns.” That simplified vocabulary seemed to be a benefit, as one student writes, “You didn't have to be as descriptive in your words because you and integrated graphics to make your points for you.” One interesting observation states, “To me there’s not a huge barrier to writing comics as there is for traditional literature.” The writer explains this further, “trying to get a novel sounding good is harder than judging how a comic looks by eyesight.” In other words it’s easier to make a professional-
looking literature piece based in comics than in traditional writing. However, that student points out, “Writing in a comic is still difficult though.”

Many commented on the sheer amount of writing involved. A student writes, “I am not skilled in writing” as a reason why “writing” was difficult—not just comics. Others write that there was a lot of writing. One writes, “There was a lot more written work in the process of making comics than I thought” and another says, “There was a lot of writing that went into them so it was hard to figure out how it was going to turn out or work in a visual format.” One student wishes that I helped them storyboard more saying he or she wishes “it would have been taught or practiced more, because that seemed like a very important aspect.” As I previously mentioned, students often comment on the amount of writing in visual assignments and it is a common theme in multimodality and visual rhetoric.

A focus on the story seemed to preoccupy students in their reading and creation of comics. While I never spent a lot of time discussing plot in their technical descriptions, some seemed to home in on the plot found in technical comics and sought to create their own stories. Many commented on creating a “good plot or story” and some mentioned the difficulty in turning it “into something interesting.” One mentioned that the story allowed the writer to focus on “the story or experience the reader was going to have while engaging in reading the comics.” On that note, one participant had issues with the lack of storyline in some of the comics that we read: “The instructions really did not have a storyline, embedding a storyline could complicate the comic creation process more.” Another student seems to echo this concern in adding story to the technical documents by writing that “Not making them purely instructions” was difficult. One student observes that “comics are very story based. Even during the instructional comics that we looked at on Moodle, they were still story based.” In the future it might be helpful to focus more on storyline in both the analysis of our readings and in the creation of students’ instructions.
Difficulty of Art

Unsurprisingly, many students struggled with the artistic side of the design. In all fairness to technical communication, students struggle with design with traditional technical communication documents too. The personal nature of the art seemed to add another layer of concern for some students. For the most part the comments can be described as artistic nature struggles, artistic nature of design, problems with drawing people, finished product is different than imagined, general concerns, style and planning issues, working with panels, and digitalization concerns.

Some struggled with the artistic nature of the documents themselves. As one student admits, comics “are still difficult to read on rare occasions.” Another student mentions, “The picture tells the story rather than in traditional texts that have pictures supplement the text.” One respondent claims that “the artistic aspect of comics are [sic] hard for me to grasp because I struggle in using visual art to communicate ideas.” Most seemed to enjoy the art found while reading comics.

Others had the same issue with the artistic nature of actual design. Not uncommon were thoughts like “I still see comics as something requiring an artist to make a great piece.” One student found the adaptation difficult, “mainly due to personal artistic limitations coupled with hardware failures.” One student thinks it might just be the newness of the medium and adds, “Artistry can be time-consuming.” Another says “It was frustrating to try to make my instructions look like the comics from class because I don’t have any artistic skill.” One student writes that creating art “Seemed more difficult for me since I am not creative with art.” Not all considered their lack of artistry skills the problem.

At least three students commented on the specific problems of drawing people. One student commented on the difficulty in creating a “group picture” which I assume means any panel with more than one person in frame. One writes, “Drawing people was the hardest part of composing comics, because it’s hard to find a balance between realistic and relatable.” Another students agrees
with this: “I found that composing the characters and making sure the images were exciting to be the hardest parts.” Why the student was concerned with the graphics being exciting is interesting. Comics don’t require exciting graphics on each panel, but I assume they mean that instructional comics tend to have more active graphics than traditional instructions.

Other students commented on the difficulty in the finished product being different than what they had imagined. One student commented on both the difficulty in drawing people and his disappointment in the product. He writes, “I found ‘drawing’ my characters to have proper expressions, body movements, and other visual aspects to be just like in my mind, more difficult than originally expected.” A more technical version of that appears in this student’s response: “Negotiating the conflicts between ambition and technical/artistic prowess was the most difficult aspect.” Finished products often fall short of expectations and it’s not too unique that students experienced this sentiment.

Many students had a more general approach to the difficulty in art. Variations of the theme of the art being hard to create appear and are so similar that most don’t need to be cited. Some of the more interesting comments include, “I found that illustrations to be the most difficult part of composing comics” and “Producing graphics that matched the written text and were a high enough quality for the assignment.” Most of the others were variations of “I found that illustrations to be the most difficult part of composing comics.”

Some students mentioned issues with planning images and with creating an appropriate style. One writes, “Coming up with illustrations was the most difficult part, because I am not an artist by any stretch of the imagination.” And another mentions the difficulty in planning, “due to weakness in hand-drawing.” Once the planning was complete, some mentioned the difficulty in “Making it look good/stylish” or “Choosing the style and theme to be what I wanted.”
A recurring subtheme category was students working with panels. One response claims the most difficult part of the project was the “drawing of the images for each panel.” One writes, “It was difficult to figure out what each frame should contain image wise” and “It was also very time consuming to draw the panels.” Similar to the stylistic concerns, a student writes that he/she struggled with “Drawing and making panels aesthetically pleasing.” Whether it involved panels or something else, others pointed out their difficulty in digital art.

Sometimes it wasn’t necessarily the art that was hard, but the digitalization of it: “it was quite tedious trying to draw it and the online software was not helpful for what I needed to illustrate.” One gave a more detailed response: “I’m not much of an artist, so all of my comics had to be created digitally. I am not terribly proficient in digital art either.” One struggled with “computer manipulating” and another suggests, “If I had a drawing tablet the process of making the comic would have been simplified.” Another was quick to point out that aside from the digital art problems, they really enjoyed the process.

For any project of this nature it’s helpful to read the concerns of the participants as they struggle with artistic demands that they had never previously experienced. Before we can make claims on how comics teach visual literacy to students, sifting through students’ hardships in art helps balance any claims made about the medium’s value in the classroom.

Medium Issues and Elements

Some elements unique to the medium of comics, or at least students’ experience with the medium of comics, appear in this section. Some responses seemed to highlight the value or newness of the medium of comics specifically. While most of these responses were neutral or positive about the medium, a few had a slight negative aspect to them. These include color capacity, ease of reading, the 9/11 Report timeline, the medium’s stability, other medium elements, transitions, and comics flow.
As I’ve mentioned, I didn’t think color would come up since it wasn’t something we really discussed in class. However, one student writes, “For me the more colorful aspect of most comics greatly improved my interest and helped me stay focused.” Others commented on color’s ability to interest readers: “people are drawn to more bright colors and pictures” than to “words.” One student writes, “color can be, but doesn’t have to be, important” while another claims “If you see the bright colors and the specific format you at least stop to take a look at them.” Referring to the bright colors in comics, or the medium in general, one student concludes with “People are drawn to comics no matter what.”

The ease of reading or the newness in reading comics appeared in some of the answers. Some responses talk about the “artwork involved” and “pictures telling a story” being key to the medium while another focused on the story element of comics: “they are a story which is true for any comics.” Another definition offered reads, “They are colored, easy to read with graphics as well as text.” These responses don’t glean a lot of insight but show students view comics as being visual in nature. But one reader admits that comics are a “little harder to read because you have to find the text on the page.” Some students gave specific examples, including one about Scott McCloud’s work influencing him/her to use hand-drawn images: “I think that Scott McCloud’s reading dealing with how hand drawn images tend to work better in comics influenced me to hand draw the comics [sic].”

Two responses deal directly with a timeline found in The 9/11 Report: A Graphic Adaptation. This timeline folds out and show the four flights involved in the terrorist attacks played out and at what time. It synthesized many pages from the original 9/11 Report into a handy, visual timeline. One response says, “the timeline to present the whole event [referring to the 9/11 Report timeline of the hijackings] was impressive to read about in The 9/11 Report.” Another student writes about the timeline too, saying it “does well in presenting a couple things at the same time.” The capacity for
the medium to simplify complex events in technical fashion is especially effective and it was interesting to see students picking up on this. In fact, an interesting study could have involved having participants read the timeline from the original commission report and the timeline and compare the two.

Many responses dealt with the expectations of the medium not really changing in their minds. As one student says, that the “format and design of the comics” were how he/she “always perceived.” Another writes, “In basic form and content, I suppose the concept of comics have stayed the same for me. They are still comprised of images and words in a sequential type of format.” Many others commented on the “form”, “format”, and pictorial nature remaining the same to them. One points out that “The general medium is the same and style seems consistent regardless of purpose” while another says, “The concept of images and text working together to convey a message” is comics’ consistent goal. One writes that “Comics are still a composition of script and pictures”, and another admits that the “style of comics is the same as what I thought originally.” One particularly interesting response comes from this response: “I still see them as sequential art.” The fact that the student had an understanding of sequential art seems noteworthy since this is primarily an insider term.

A few responses were a bit harder to decipher. One response, “I still see what is the paper as comics” must refer to newspaper comics or gag comics/cartoons. I’m not sure if the student believed that technical comics were negating that those newspaper comics were somehow less valuable and he/she needed to defend them or not. This response is slightly more baffling: “I still initially think of comics as a comic book when I first hear the word comics.” This is a legitimate response and I’m not sure why the responder felt like believing this would be something taught against. Also, it would be helpful to know the respondent’s definition of comic books.
Some students found the medium facilitated transitions while others found it complicated them. Specifically, some students wondered how to transition “from idea to idea without confusing the reader.” Some students struggled with “Getting the comic to flow from panel to panel” or the “apparent flow of the storyline” was a struggle. As one student succinctly put it, “I found it difficult to find good ways to transition from panel to panel.” Additionally, one participant writes, “I also sometimes found it difficult to make sure all of my graphics were coming together to create one cohesive theme.” For one student “The amount of effort needed to get the frames to flow was more than [he/she] expected.” However, more students commented on the positive element of transitions in comics.

In response to what elements, if any, were simpler than regular compositions, one student responded with a simple “the flow.” Other students shared this opinion. One writes, “The organization and step by step process was simplified since it required less transition sentences.” A student points out the functionality of panels in instructions: “I found the comics made the instructions flow better, since each step could be put in a frame, and the medium calls for the frames to follow.” The most intriguing response came from a student waxing philosophical on the topic:

Even after thoroughly planning my comic script and panels, I found that when I was drawing them out the flow of the comic almost seemed to write itself, and deviated from my plan in certain areas. This seems to suggest that presenting the information visually provided a more direct means of seeing how it should be organized.

An interesting thought, although one that isn’t really testable. Another expands with, “In traditional writing I would normally use transitions and main topics in the body of my papers. In a comic, the flow is much better because it is more so a story.” Sometimes when one has to design with primarily graphics, the images themselves take on symbolic writing moves with placement, organization and juxtaposition doing the job of transitioning.
**Juxtaposition of Elements**

Juxtaposition, a term the McCloud uses in *Understanding Comics* to explain how pictures and words are placed next to each other, appeared in many students’ responses. I found this particular response very fascinating because comics could be a visual medium that teaches this type of design in an extremely effective fashion. The responses usually had to do with the artwork, the writing, getting the combination right, avoiding redundancy, or the ability to do less with more.

Some responses seemed to be focused on the art side of juxtaposing, whether in design or in reading. One writes, “Descriptions are still made with pictures and text boxes” like regular instructions, indicating that juxtaposition exists in all forms of technical instruction. One student wasn’t sure “what to add into the comic” and expands, “For example does it need more explanation to go along with the picture or more steps.” This response indicates that placing art can be hard: “The difficulty of putting illustrations into the comic.” But another responds that comics allows “two avenues to reach a concept.”

Other responses were more focused on the writing side of juxtaposing. One student declares that “Coming up with short quality sentences for each caption” was particularly difficult. Coming up with “efficient dialogue/use of words” was as difficult as creating images. Another writes, “Producing language that is cohesive to the action depicted in the image” was challenging.

Another concern was the proper balance in juxtaposition of “Having a right combination of text and images” or “The difficulty of pairing of text and images” and “Cohesion” being the biggest challenge. At least four responses were concerned with “combining”, “integrating”, or “matching” pictures and drawings”, with one student adding that “every piece of text makes very clear instructions as opposed to only pictures or all text with a single image of the final product.” Once that connection was made, the document was especially rewarding, as one student shows: “The best
parts were when images were directly connected to the textual idea being developed.” This juxtaposing could lead to problems though, as explained next.

Students also concerned themselves with not being redundant with their juxtaposition: “One of the biggest differences that I noticed was figuring out a way to make sure that the information I was sharing through the graphics of the comics wasn’t redundant with the text.” A student with a different approach mentions, “Making pictures to go along with the story being told” was a challenge as well as “integrating it all together.” One response focused on the characters: “I had a hard time drawing the characters and relating it to the words in the panels, so they would complement each other.” Going beyond words challenged others: “Making art that actually added anything to my descriptions was tricky for me.” But one student pointed out one of the lessons I was hoping to convey: “I learned to not say/write anything already described in an image” and expands, “Having my images and writing complement each other was something I learned a lot about.” This lesson is valuable for all technical communication, especially in presentation slides. Teaching the “comics rule” is an extremely valuable technique to help students move beyond the text-based slides they are used to seeing.

For six students, using images instead of words allowed them to portray more content with less words. One writes, “It seemed like more was said with less words. It felt less like a wall of text.” Another adds, “The text was very simplified and much easier to expand upon by using the images.” One writes that incorporating “images instead of explaining everything with the text” allowed a simpler process. One student responded positively about trusting in images: “Letting the images speak for themselves” while “Providing more information than just words.” One complimented comics by saying “Their excellent blend of visual communication and written text” was especially effective. Another mentions that “The pictures can tell many things” and less words are needed to “describe” the process.
**Designing Obstacles Wrap-up**

Generally speaking, students enjoyed the picture elements involved in comics making. They commented on the complexity of color and the difficulty of juxtaposing images and words. They liked the simplicity and rhetorical power of pictures. They liked working on precise images instead of typing words. Students found that graphics could do the work of words. However, working with graphics and doing art is a challenge for students. Many felt that others should be handling the art section. Others found the design process in the medium to be a bigger challenge than they thought. Some found the process rewarding. Students had interesting observations toward the transitional movements in comics and creating a cohesive storyline.

**Stance on Designing and Reading Comics**

Once again students’ opinions came out when discussing comics and this section covers their stances on both reading and designing. This section has three subcategories: *Pictures Do More Work* (which includes my original coding category of the same name), *Technical Communication* (which includes my original coding categories of “experienced with or without technical” and “technical communication”), and *Enjoyable/Encouraged Reading* (which includes my original coding category of the same name). After discussing students’ responses to these three categories I’ll tie them together.

**Pictures Do More Work**

Many respondents professed a joy in pictures and some even suggested that pictures were better than text or traditional instructional means. This section features students’ comments about their surety that pictures are better than words, pictures are merely the focus, pictures are easier, pictures do more work, pictures involve fewer words, and pictures surprised the user.

Relying on the cliché a student writes, “A picture paints a thousand words, so less becomes more and is helpful in clarifying details.” Students commented on pictures working better than textual approaches. One student mentions that there are more pictures than words “for every
Another claimed an “enhanced ability to express oneself through comics with the use of pictorial support.” This respondent claims, “Comics make it easier to understand by using pictures to help with the explanations.” The same student concludes with “Traditional instructions can get very wordy and hard to follow, but with comics the words are minimized on each panel and a picture is worth a thousand words.” We begin and conclude with the same cliché—albeit a legitimate one.

Some students avoided judgment but referred to the pictures merely being the main focus of comics. One writes, “They include helpful pictures to describe what is happening in the comic.” Another adds that “You didn’t have to write out what all was going on you could just show it with pictures.” Other responses were much simpler, such as “Pictures are still the main focus”, “Photos to help explain details”, “the strong visual aspect.”

Then there were the responses that ventured into claiming that pictures/visuals are easier to use to describe processes and products than words are. For example, “It is often easier to show something with a picture than to communicate its appearance verbally.” Another writes, “Some things are a lot easier to describe with illustrations, such as how to move or connect things in relation to one another” and continues, “It’s easier to show a picture of some parts and tools than to try and describe them.” This may be because as one student claims, “Sometimes written instructions can’t really explain how things do as well because it is hard to describe actions that can be shown by a picture.” Others claim that visual instructions are easier in general: “It was easier to explain what is going on with pictures” or “It is often easier with a picture” to “portray information” than with “words.” This response is similar, “Clarifying some instructions was easier with the use of graphics as it put less importance on the written text.” These are interesting but aren’t necessarily specific to comic books but visuals in instruction in general.
Others took the visual idea and made it specific to comics, or as one writes: “The comic book is easier.” More detail is found in “It is easier to visualize what is going on in a comic than by strictly using text instruction.” This may be because, as one writes, “Comic book instructions are more appealing than regular instructions, and they are often easier to navigate to the specific step that the user desires” or because of “the image aspect” as another claims. Another claims that “any instruction on how to do something” created in comics is easier “than by strictly using text instruction.” As one student writes, the amount of graphics could be key: “Comic instructions were easier to understand as they had more graphics.” Whether comics have more graphics than traditional instructions is debatable but probably at least somewhat accurate. Or, it could be argued that images from comics are more interesting. One student responds, “Comics were easier to read since the pictures interest me more and there is less text to read.”

Another commonality revolved around students mentioning that the pictures did the work of the writing. As one student writes, “Since most of the script is just dialog and you have a lot of pictures, you don’t have to describe the setting. You just let the pictures do that for you.” This is echoed by another student who writes, “Allowing the comic panels to convey information that normally would have to be put into words” was easier for him/her. Put more simply, one writes, “Pictures easily display what words may take a lot to write” and he/she offers this example: “Step by step processes could be shown in much shorter time periods because of the comics” and continues, “Rather than typing/writing down every single aspect of each step, you could just show the reader.” Not all students thought the pictures did the work of writing though, as one points out, “There are some things that are better explained in words than pictures.” All of these observations add to the richness of how students learn and showcase that relying on one method could cut off students’ learning potential.
On a similar note, students mention that less writing is often involved in comics. One writes, “There is much less writing because the visualization of the frames helps tell the story very well.” Another expands on this, “It was much easier to represent certain ideas through the use of pictures” which, he/she mentions, “cut down on the amount of writing required for description.” While not unique to comics, one student writes, “Some things are a lot easier to describe with illustrations, such as how to move or connect things in relation to one another.” He/she continues, “It’s easier to show a picture of some parts and tools than to try and describe them.” One student commented on the pros and cons of pictures: “The comics were difficult since a lot more images were used and you needed to plan them out better than the images from other assignments. But it was easier in the sense that there wasn’t as much text . . . to write.” Explaining processes with both words and visuals are useful exercises and students should be equipped in both. Comics effectively teaches students to do this by having them focus on both.

Other students were surprised at the how well pictures worked. One writes that he/she was surprised at “How well pictures take the place of words”, with another saying “It was a lot simpler than I thought.” One student writes, “It gives an interesting new perspective, much more ascetically driven in many more complex [ways].” This response critiques traditional instructions as being “hard to picture the steps or process” at times, but adds “With a comic book, I could almost know the process by just looking at the pictures and putting the scenes together.” These responses to pictures being better than words are interesting and deserve more attention.

**Technical Communication Comics**

The technical communication category could fit in with other themes as well but featured students directly mentioning technical communication. This section covers how comics show technical communication’s variety, comics muddy technical communication’s purpose, students’ experience with comics, and students’ experience with technical comics.
For a few students, comics showcased the potential of technical communication. One student says he/she was surprised by “How helpful comics could be in the technical world” and continues, “It helped me (a visual learner) to understand the situations better.” Others point out “Making comics was a nice change of pace compared to traditional technical documents, or even traditional writing.” Other students mention the informative nature of comics or how the purpose can be more guided to technical communication. Others saw comics as a representation of the robust nature of technical communication: “I thought the comics section of the course was a good representation at just how varied technical description can be.”

Some students discussing technical communication either wondered if comics were worth the work or wanted more comics. One students thinks “trying to storyboard and illustrate technical information is more trouble than it’s worth.” One student admits comics can teach but isn’t sure “if it’s the most effective.” One student wants more: “I would like to see more comic based instructions [sic] in traditionally confusing areas like physics, mathematics, and engineering.” These topics do exist in comics form so hopefully that student will look for them. One student even went so far as to say “You should try to get other English teachers to try the comic instructions out for Eng 314, because some of my friends in other sections thought it was a very neat idea.”

Some students’ familiarity with comics affected their viewpoints of the entire process. However not all of them had experience with the technical comics used in class. One of these student writes, “I had a pretty strong appreciation for the artistic merits and entertainment value of comics coming in too this course, and that remains unchanged.” This opinion seems to span those familiar with comics, or as one student writes, “It wasn’t too difficult a process as I am familiar with it.” One student broadens his/her appreciation of the medium: “I still enjoy reading comics and I feel that they make reading more interesting and fun.” At least one student had comics design experience: “I always enjoyed plotting and drawing comics since young so I was pretty comfortable
in using comics in this class.” No other student explicitly stated experience with drawing comics in the past, but certain responses given makes me wonder if others had dabbled with designing comics in the past.

Many wrote about being experienced with the medium but having their vision broadened by the technical communication comics we covered in class. As one student puts it, “I’ve read many comics, but only as a form of entertainment. Reading Eisner’s work on PS Magazine opened my eyes to the versatility of the genre.” This student wasn’t alone: “Taking comics seriously as an art form was never an issue for me. But now that belief is solidified from reading McCloud’s work. It went more in depth than I thought possible.” One student mentioned his/her experience with comics but adds “I have never analyze [sic] comics as critically as I did in this class.” One student writes an interesting response of previous knowledge merging with the course curriculum: “Will Eisner was easier to read for me, personally, partly because I’m familiar with his ‘The Spirit’ comics, and with that, it also have more visuals traditional to my comic experience and liking.” The student adds the critique: “I found Scott McCloud’s writing too lengthy, and aside from the visuals, slightly boring.”

Then there were the students who had experienced technical comics in some form or another. Responses like, “I am pretty familiar with comics . . . I have read informative comics in the past” showcase this type of reader. One gave particularly interesting insights: “My appreciation for the utility and entertainment value of non-fiction non-autobiographical comics such as the 9/11 Report has been increased. This semester has been the first time I read such comics, including outside reading of the titles A People’s History of American Empire and The Influencing Machine.” Those previous comics mentioned are very difficult in nature and the American Empire book was used in my composition study that mirrored the technical communication one. Other responses were simpler in nature with students realizing the sequential nature of some genres: “I have read some comics used
in instructions or some manuals. It can be very useful to help people understand the instruction better.”

**Enjoyable/Encouraged Reading**

Many students pointed out that they enjoyed creating and reading the comics. It’s important to note that many small notes about enjoying comics were strewn throughout the responses and this section doesn’t constitute all of the times students mentioned enjoying comics. This sections covers students’ enjoyment in reading comics, students claiming comics are better, students surprised by comics’ potential, students claiming that comics held their interest, students find comics less boring, and students miscellaneous praise.

Students specifically mentioned their enjoyment of reading comics or their belief in comics’ ability to convey information in an effective fashion. Some comment on how comics made reading fun: “Comics are fun to read and easier to understand.” Or they mention than “Comics are more interesting to read.” This sentiment of almost preferring comics appeared frequently. Some admit, “I was more inclined to read the comics than the traditional instructions” or “I felt the comics were a breath of fresh air in comparison to the texts.” One student expanded on this: “I found reading to be more enjoyable in comic form. I can usually only read for a short period of time before I start to fall asleep but comics are more engaging.” One student complimented the creators of comics and adds, “Humor in comics instructions made it a more enjoyable read.” One student liked the supplemental readings and writes that comics “Encourages more reading than assigned.” One student, who calls him/herself “someone who rarely reads”, admitted that comics encourages reading. But some still point out some of the flaws: “Some of the nonfictional ones had a lot of wording and it was not as entertaining or fun to read.” Another admits, “When panels get too wordy, you almost want to skip it,” while one claims they enjoyed creating the comics but “the traditional texts were easier to follow because of the formats they required.”
Some didn’t just enjoy comics or claim they encouraged reading but argued that comics are better in some way than regular texts. One writes that comics are “more attractive” than regular texts and “They grab my attention just like a picture book did when I was kid.” Another one claims, “if done correctly, comics can make for the best learning tools and instructions.” One just liked that he/she didn’t “have to type an essay which is kind of boring.” A more modest suggestion is that comics are “An interesting subject of study that can perhaps stretch people’s minds.” One lengthy reply shows comics’ potential:

I think that, while still difficult, comics are more friendly to less experienced creators [sic]; at least on the overall design side of things. I think most people have a general perception of ‘what looks good’ but when writing a novel it’s harder to get a good narrative without sounding too simplistic

While some had this grandiose reaction, others were more interested in what they found to be an enjoyable process in design.

Students wrote about the writing and design process and how their enjoyment was often a surprise, as one writes: “I enjoyed it more than I thought I would.” Many found it “rather enjoyable” or “fun” or even “really fun!” Some thought, “the assignment was enjoyable and better than doing a typical composition.” One writes, “It was actually very fun to draw the comics, and was kind of a nice study break.” One student mentions the difficulty in the process: “It challenged my abilities to explain things simply yet well.” For this particular respondent it awakened a love of art: “I realized I really enjoy drawing.” A nice conclusive remark on design comes from this simple response, “It was fun, I really enjoyed this assignment.”

On a similar note, students remarked on comics’ ability to hold their interest better than regular documentation. As one student writes, “It was more interesting in the comics, and I felt like I read less which is good.” Another claims that “in general, comics are easier to understand” and
that “comics keep my interest for longer.” One claims the “comics made me more interested and entertained because of the use of characters and color and the language.” A different respondent claims that “the comic format can help keep a dry topic more interesting.” A couple students point out that “comics are more interesting than traditional texts” or that “the point was more interesting in comics.” One student has interested in the inherent comedy found in the medium: “Adding humor to the words or pictures makes the task interesting and maybe a little fun.”

Comics weren’t just interesting to some students but also less boring: “I found the comic format to be helpful in making what I would normally consider fairly dry or boring material more entertaining and easily digestible.” One suggests that replacing “detailed descriptions” with “pictures increases interest and retention.” A simple response claims that “Comics tend to be less dry than traditional texts.” But one student admits that “Depending on the comic, it could make a very boring or hard subject jump to life or become much more sensible.” Another unquantifiable statement, but an interesting one because a lot of the research in comics studies, especially those in other fields, focus on using comics to teach topics because they hold students’ interest.

A few other students mentioned various forms of praise that were a bit more general. One writes, “I really enjoyed the class and my interest in comics has expanded since starting this class.” Another adds a similar thought: “I really enjoyed studying comics this semester.” A simple, “comics rock” was given by a different student. One called the “creative approach to the traditional instructions” a “good direction.” One “enjoyed this assignment more than all the others” and another mentions, “the graphics were very engaging and helped me understand much more.” One compliments me saying “good job incorporating comics into a technical writing class.” Two commented on the assignment being different with one saying it was “therefore more enjoyable” and another saying “I thought it was useful.” Perhaps the most useful praise for the study came from this response, “I thought the comics section of the course was a good representation at just
how varied technical description can be.” I agree with that sentiment; technical communication is an ever-growing and molding field that continually redefines itself as new data is presented or as industry changes. Its capacity to evolve and progress is one of the main things that first drew me into the field. When I first felt the potential of comics in teaching visuals, I knew technical communication would be the field most primed to accept such research.

**Stance on Reading and Designing Comics Wrap-up**

The main takeaway from this section is students’ reactions to the medium of comics. Some that the medium catered particularly well to technical communication with comments about the timeline in the *9/11 Report* being effective. Some students found comics more enjoyable and helped them focus on the topic. Others left the class when the same perception of comics as when they started. For many, comics seemed an appealing option for technical communication to incorporate while less suggested it only got in the way of tech comm. The potential of comics in technical communication is an exciting possibility.

**Conclusion**

The initial goal of my research related more to exploring the option of having sequential art become a viable means of publication, but after years of exploratory research I realized that such a research goal lacked the capacity to be measured with standard criteria. Luckily, the current trend of comic-art textbooks and peer-reviewed research seems to be showing that such a goal doesn’t need to be explored in a classroom study because it’s happening on its own. My goal shifted to looking into how students reacted to comics in the classroom—but I wanted to go beyond just thinking about reading comics and the motivation behind reading. I devised a plan to have students design comics for academic purposes. The research was first done in the composition classroom and the results that emerged fascinated me to the point that I realized that comics’ capacity to teach visual literacy was strong and should be explored in the professional communication classroom.
As researchers have shown, sequential art—including comics—can be found widely in technical communication documents, so teaching them wasn’t that foreign to the class topic. As for business communication, other than some fantastic books that explain marketing, macro- and microeconomics, and other business practices (cite them here?), the need for designing comics with students wasn’t very practical or necessary. Because of this I didn’t include any comics research in my business communication courses. The same can be said for science communication—a load of incredible comic books that describe evolution, physics, and other science topics exist but justifying students’ time to create comics in the classroom seemed unnecessary and perhaps even detrimental. That said, research looking into how much reading comprehension changes from teaching with comics vs. traditional texts for those topics would be extremely valuable. Perhaps this could be done in the future in a broader project crossing various academic borders.

This chapter has covered the different categories of questions into three: reading, design, and a combination of the two. It explored differing pedagogical issues that may have affected answers. It looked at the five major themes that covered the multiple subcategories. It explained the different theme definitions and their categories. It looked extensively into students’ responses to the answers, which I organized by theme. For chapter five I will dive deeper into the analysis of students’ responses and how it relates to my thesis and research.
CHAPTER FIVE: ANALYSIS AND CONCLUSION

My goal with this study isn’t devise a universal pedagogical approach to teaching visual communication, but merely to explore the value of this particular comics classroom study and to see what affordances it offers to the following research questions:

1. Can comics be used to teach visual literacy in technical communication?
2. Does having students design comics teach the necessary visual literacy (visual rhetoric and multimodal) skills required for technical communication?
3. How do students respond to creating and studying comics in technical communication situations?
4. Can using comics as a medium teach critical pedagogy techniques, such as discussing power, authority, and otherness?

In order to assess the efficacy of the research and how it responds to the initial research questions in this chapter, I will analyze the data gathered from students.

In doing that analysis, I will follow the category sections outlined in chapter four: reading-specific questions themes, design-specific questions themes, and reading/design/combination questions themes. It will summarize the findings, interpret them, put them in context, and list implications in each theme section. Then the chapter will address the limitations. Next I will directly answer the research questions and summarize the key findings unique to comics. Finally, I will offer research recommendations before concluding and looking to the future.

Reading-specific Questions Themes

The category of reading-specific questions produced multiple themes, some more valuable for the research than others. This section includes the two main themes of Attitudes Toward
Reading Comics and Stance on Reading Comics. Within Attitudes Toward Reading Comics were the subthemes of *Comics Audience Expectations, Comics’ Purpose Remains Unchanged,* and *Genre Expansion to Technical Communication.* Within Stance On Reading Comics were the subthemes of *Reading Comics Aids Readers* and *Comics’ Worth Questionable.*

This section will cover the interpretation of students’ responses from the reading-question section and will follow the aforementioned theme order: interpretation of results, context of my analysis with previous research, and the implications of those findings, including limitations and recommendations.

**Interpretation of Results**

One common theme that came out of the reading-specific category was that students found images satisfying. Yet there are certain elements unique to comics that are particularly useful for visual literacy. For one, comics are inundated with images—not just accompanying pictures to complement word-based documents. Traditional technical documents rely primarily on words and print-based layouts, but comics allows students to be immersed in a world of pure imagery with text as a guide. Text is still vital (especially for details, as students note), but swimming through the visuals allows students to really experience them.

On the other hand, many students commented on the fact that they thought comics were for “nerds”, were funny, or consisted of just superheroes. While some still felt that way at the end of the study (especially in pointing out the childish nature of comics), many found that comics could serve multiple functions. Comics have a stigma in the United States as being “a little silly”, as one student put it, and this study won’t magically change the country’s perception. The fact that the medium isn’t considered mature by some audiences means this type of teaching might still have a journey ahead of it. However, many students commented on how they now view comics as serving more functions than just being entertainment. Challenging perspectives and viewpoints of topics is always key in
learning, yet a more practical lesson emerges as well: paradigms of the functionality of a medium constantly change and that change is beneficial. For example, the sheer amount of user-generated video content of a technical nature currently available would be astounding to a technical communicator twenty years ago.

Students mentioned that comics could contribute to technical communication and transcend language barriers. Another consideration comes from those that found comics as a form of technical communication as a new and viable function of comics. Multiple students commented on the technical nature of comics with some realizing that comics could be effective tools to teach educational topics. However, others had no opinion change toward comics and remained unconvinced of its potential. Students note that comics transcended narration or have a “multi-lingual” capacity. Where words limit ethnic and languages access, comics instructs. One popular example of this could include the Korean web-comic (no English title) that features a horrific hijacked scrolling technique that scares even the most hardened reader. It became a viral internet sensation in the United States even though not a word of it was in English.

Many responses indicate that reading comics was more enjoyable than regular texts, some suggesting they are more effective too. Comics’ effectiveness can be due to students’ inherent familiarity with caricature in general. Moreover, line drawings are often considered more effective than photographs in instructional text and using cartoons and caricatures could potentially simplify the necessary visual data to a more precise format. Other students commented that their definitions of comics expanded, which, using critical pedagogy as a basis, could be considered a way of challenging them to view the world through new lenses. On that token, some grew an appreciation for the medium by actually creating in it, something espoused by critical pedagogy and multimodality.
While some students admit that comics might be engaging, they don’t think this makes them more effective tools for technical communication. Comics often have stories and often in technical documents readers merely want the data and these storytelling features just become noisy distractions. While this is a valuable insight, the story element of comics is not a necessity of the medium even if students believed it to be. So, student responses about comics needing story isn’t really problematic.

Responses suggest that comics might serve best in providing a how-to approach to a topic but that abstract and scientific topics might still be best served in text. This perception could easily be ascribed to students primarily reading how-to manuals as comics examples in my class. Nevertheless, students made a legitimate observation that comics could facilitate big-picture approaches and how-to manuals. The caricatures could improve understanding of topics and the brief storylines might keep the reader’s attention.

**Context of Results**

The use of comics in academia is one of the few areas of my study that has already been researched. There are many pedagogical papers and teaching aids that have promoted teaching using comics in the classroom to teach concepts. This research is spread over sixty years and in multiple academic fields (Duffy, Wolk, Adams, Hosler, Gerde. Foster, Bryan, Yuan, etc.). Research seems to support that reading comics can garner interest in a topic and allow learners access to a more visually stimulating and effective teaching strategies. While these results don’t necessarily fit in with observations of students who imply that comics are better for big-picture ideas, they don’t contradict them either—and students may believe that comics only work of big-picture ideas because of their limited introduction to the topic through my classroom study.

Comics’ educational power is well documented and this study verifies previous research on the topic. A long history exists of attempts to use comics for educational purposes (see EC Comics
and Max Gaines). We’ve already explored some of the multiple educational comics that are currently available from academic and teaching publishers in chapter two, and this didn’t even mention the many commercial publishers delving into educational comics as well.

It’s not that surprising that the images in comics were able to capture students’ attention. This has been expressed in other visual rhetoric and multimodal studies, including The New London Group’s initial manifesto and scholarship from Jacobs and from Brooks. While much of what I did in my dissertation with comics has not been attempted before, there does exist research on reading comics and how students respond to them. My research seems to reaffirm what others have said concerning comics being an appealing medium for students to learn from (Dudress, Jacobs, Yang). Some scholars have advocated comics production in the classroom (Morrison, Bryan, and Chilcoat) but few, if any, advocate for technical comics.

Visual rhetoric teaches that visuals aid reading and participants’ responses concerning reading comics seem to reaffirm the idea that visuals (in this case comics) aid reading (see Bernhardt). The pedagogical implications of multimodality also appear in students’ responses. Some grew an appreciation for the medium by actually creating in it, which enriched their reading.

**Implications of Results**

The responses in my study reaffirm many of the notions of visual-based reading claims: it seems to improve students’ understanding of topics and encourages reading. A usability study that used both traditional instructions and comics might be a logical next step to truly observe comics’ potential as aiding reading in technical communication.

Another aspect that emerges from these themes is general open-mindedness toward new topics and mediums. Having students use an unexpected medium to create genres seems to help students realize that preconceived notions aren’t always true. This could lead to students being more
willing to work collaboratively in mediums and genres that they are unfamiliar with. It could also help them approach problem-solving techniques by using the unfamiliar.

**Design-specific Question Themes**

The design-specific question themes category highlights students’ responses to their processes in producing technical comics. The themes include Planning Comics, Design Obstacles, and Final Product Observations. The Planning Theme consists of the subthemes of General Planning Comments and Plans Were Better Than the Finished Product. The Design Obstacles theme consists of the subthemes of Organization Milestones, Comics Elements, and Software. The Final Product Obstacles consists of the subthemes of Ease of Medium, Time Issues, and Visuality.

This section will cover the interpretation of students’ responses, the context of my analysis with previous research, and the implications of those findings, including limitations and recommendations.

**Interpretation of Results**

The main thing to gather from the planning themes is that they sound remarkably similar to any form of writing. I would not be surprised that if a similar questionnaire were handed out after a more traditional assignment in technical communication the responses about choosing topics and planning the assignment would nearly be identical. The same goes for those that were disappointed that their final product wasn’t as impressive as they had imagined it to be. A very small number of students found planning comics to be easier than planning traditional writing, but one of those that responded this way may have had previous experience with comics design. One specific difficulty that was identified by students concerned planning for character expressions, which isn’t common in other technical work.

Students commented in particular on the organization and design of their comics. Students had concerns with panels and how they interacted with overall page design, document flow, and
panel-to-panel transitions. Making image sizes appropriate and working with panel design was another common element to the responses. Both of these elements are useful for students, though, both in comics and other forms of technical writing. Experimenting with visual design and organization is a vital element of learning software and graphic design elements. Any exercise that helps students work on flow and hierarchy is a positive aspect in technical communication and writing in general.

Tone and narration are hard to grapple with in any writing, but in comics these become even more difficult. Third-person instructional comics are hard to write and aren’t particularly common so students commented on narration. In creating an academic comic for Digital Humanities Quarterly I’ve been faced with the same dilemma in creating a narrator, with the editors suggesting the third-person approach. Maybe encouraging this third-person point of view in the future will help students. As far as tone goes though, students seemed to enjoy the less serious nature of comics. They liked communicating in a more calm, conversational tone. Whether this is helpful for professional communication is debatable: it’s great for professional correspondence and marketing writing but not as good for more formal technical writing.

One of the most valuable lessons multimodality and visual rhetoric provide is motivating students to narrow down their writing to its central message. Some respondents felt similarly. A pervasive idea exists among students that when writing essays excessive fluff must be used to reach word limits. Most writing instructors argue against this, but sometimes it takes outside-the-box assignments to demonstrate how to achieve economy. The students in my study grappled with common issues such as narrowing their topic, simplifying their message, deciding what to edit out. Some issues native to comics also presented themselves, such as adjusting to panels, translating from essays to a visual format, and using gutters for instructional steps. More universal design ideas emerged too, such as the “comics rule” of writing that is invaluable for slide presentations (i.e., not
duplicating the message by having complementary but different text and dialog for the pictures). Another universal design issue is the realization that graphics can do the work of words in more concisely.

The digital divide and software are valuable concerns. Since these students had access to a fully loaded lab at Iowa State University, one requirement of the assignment was to digitalize the comic, but how that digitalization took place was up to the students. What I found from the comments from students was they really liked the software, and many didn’t mind paying a small fee for more professional versions of the software. When I taught a composition version of this research project at a community college, I had more lax requirements for design to cater to the digital divide that exists in community colleges. Aside from the digital divide, one prominent thing that showed up was the value in students exploring new software.

Some of the more surprising themes came in the form of students’ positive reactions as to how their design turned out. Students commented in particular about revision being simpler in comics. While only a few responded as such, and there was no question dedicated to gathering data on the topic, the unsolicited responses on revisions surprised me since I would have expected the opposite. Also surprising were the few students who felt their final product was better than their plans. Some noted their surprise about the amount of time involved, including one who liked his/her final product better than his/her plans. This is worth noting because one of the critiques of multimodality is the lack of writing, but these students responded like so many others before them working with images—there is a lot of writing involved. For some students, art is easier than writing, and they appreciated the chance to draw/design instead of just write. For the students that prefer art and visuals to writing, this project allowed them to flex their artistic muscles. At times technical communication theory forgets just how much of instructional documentation requires visuals, and this project allowed students to contemplate in greater depth.
Some students felt that comics-instruction was easier for visual learners and made more
difficult for those that aren’t. This may be the case, but I find the idea that students can be divided
into visual learners and non-visual learners to be overly simplistic and problematic. Nevertheless, for
these participants the concept of visual learners was very real and contributes to their sense of
success in visual learning. Understanding audience can be a very valuable notion for students and
addressing the idea of visual learners could be a valuable tool to help students understand that they
all can benefit from visual learning. Analyzing students’ perceptions of what creativity means would
be hard to measure, but it was interesting that some students appreciated that the comics assignment
allowing them to tap into their creativity.

**Context of Results**

Difficulties with planning and generating topics can be found in all forms of writing.
Composition theory has dealt with these issues and most textbooks of technical communication (see
Johnson-Sheehan, Anderson) and composition dedicate entire sections of multiple chapters to
helping students generate topics for assignments. This isn’t unique to comics in any way. Not
enough studies have been done in comics as technical documentation to compare the results too.
These findings are unique to the study at hand.

Aside from the digital divide, one prominent thing that showed up was the value students
placed on exploring new software. As most promoters of technology teaching emphasize, the
software isn’t important, but rather it’s the process of exploring new software approaches. This has
been documented by multiple scholars, including Northcutt, Brumberger, Lunsford, Sconce, Selfe,
Hawwisher. This research project seems to concur with that notion—the value is in learning the
problem-solving skills in using software not in actually learning specific software.

A recurrent suggestion and guide in writing consists of getting to the core of the message
and using concise language. This is found in composition, professional writing, and other genres.
Textbooks teach this feature. My research results showed students dealing with this notion and doing great work with it. It could be that the medium of comics being taught as a technical communication genre could teach students arrive at their central message in a manner that is especially effective.

**Implications of Results**

After a series of failed assignments in my typical technical communication course (aka not comics-focused), a student visited me wondering why he was failing technical writing. The answer was simple: he kept writing essays instead of technical documents. After he finally saw the difference, his revisions and work improved. I bring this up to point out that adjusting to new writing styles in professional communication is unfamiliar to many students; therefore writing comics isn’t that different for students. There are growing pains that students felt and such is to be expected. The same can be said for generating topics.

Tone and narration elements are also recurring elements of the themes. Narration might not be as helpful for the overall discussion of technical instructions, but could be an interesting thread for exploration in how narration and storyline aid or clutter technical instructions and descriptions. Will Eisner argued for story in his early technical comics, and he may have had a valuable point (13). However, the tone of technical writing often depends on audience expectations. The lessons learned here of using a conversational tone might be useful for instructional documents. The conversational approach has been used in various, successful marketing approaches (think Mini Cooper’s instructions, etc.).

Many activities exist to teach students to write in the most precise fashion and get to the core of their message, and comics seems to teach this in an extremely effective fashion. For me, this skill set is one of the most valuable themes to emerge from the students’ responses. When students focused merely on the message and how to present it through words and images in a cohesive
fashion, they were able to really work on precise wording and useful images. Students looked through their traditional instructional or informative documents and then adapted them into a written script before creating a more concise version full of images they themselves created (granted, the first half of the study didn’t adapt their script, they merely created it, but the lesson still has power). The script writing stage seems to reinforce David Bolter and Richard Grusin’s recommendations of using remediation to teach new media concepts. The three-step process of original, script, and comic also curbed plagiarism due to the multiple steps and the unique requirements of the assignment.

**Reading/Design/Combination Themes**

These are the big themes—the ones that showed up on nearly every question category. This section includes the themes of Design Obstacles as well as Stance on Designing and Reading Comics. The Designing Obstacles theme includes the subthemes of *Writing Elements*, *Art Is Hard*, *Medium Issues and Elements*, and *Juxtaposition*. The Stance on Designing and Reading Comics theme includes the subthemes of *Pictures Do More Work*, *Technical Communication*, and *Enjoyable/Encouraged Reading*.

This section will cover the interpretation of students’ responses, the context of my analysis with previous research, and the implications of those findings, including limitations and recommendations.

**Interpretation of Results**

A few of the emerging themes from the students’ responses focused more on what affordances are gained and lost in the comics-designing process. By reading the responses, we can see that comics seems to facilitate some types of writing, namely in having fewer words per document. Students often fixate on word count instead of the content behind those words, so eliminating the word count gives them a sense of freedom to write less, even though in the end most
students realized it took just as much work if not more. However, since a script was a main focus in
the process, writing was still a large part of the process and for some this script writing (including
dialog) was actually more difficult than the actual design of the comics. Yet, simpler writing and a
focus on imagery seemed to be beneficial for some students and having images dominate the text
was easier to read and created a more polished-looking draft earlier on in the process than clumsy
writing.

While not a requirement for the assignment, comics often have a story-element to them and
students picked up on this. Even though we read a couple of instructional comics with no story, for
some students the story-element was vital to the medium. Would focusing on storylines in
instructions help the reader create better instructions? I do not know, but I do think the story-aspect
of things is something worth exploring.

Students discussed how they approached transitioning in comics and offered some valuable
insight. The design of panels and graphics forces students to consider transitioning with images and
not just words. While many students struggle with transitioning in regular writing, they now have to
learn to transition with graphics as well. But it wasn’t necessarily a difficult thing for all students;
some found that making effective transitions in comics was actually easier than in traditional writing.
Some accredited this to the visual nature of comics, which allowed them to literally see their
transitions.

Only a few students mentioned that the artwork in reading comics was problematic for
them: instead for most students, the artwork in designing was troubling. Some felt that comics were
best left to professional artists. I don’t entirely disagree with this—or at least in the idea that an artist
could team-teach the course, though a hybrid course with the design department and the technical
communication would be ideal for teaching visual literacy. Some of the complaints were specific to
certain artistic endeavors, like drawing characters. These complaints are worth noting because none
of these elements were specifically taught in class. Another note of concern ties back into digital divide, as some students responded that the digitalization of the comics was where they struggled the most.

Students also struggled with how to fit in all of their images and text into one panel and then fit that completed panel within their page design. They worked on making sure the images and the text didn’t repeat themselves but served two distinct, vital purposes. In the history of comics, some artists would have an image of someone being punched with a caption reading “Tom got punched”, but as the medium evolved, such repetition went out of fashion. I often teach this concept as the “comics rule” when instructing students how to design powerful slides presentations and students worked on this rule constantly while designing. They did the same with words, working on how to get the right number of words in each panel and to make each word count. Juxtaposing with the right image, right word choice, and right design was discussed by many, which is fantastic for the purposes of my research questions. Juxtaposition skills are extremely valuable in technical design and comics teaches this exceptionally well.

This process wasn’t all that novel for the students already familiar with comics. For them, it was a mere confirmation that reading comics is pleasurable. Those interested in art also seemed to share this opinion. A small number of students had already read technical comics before too. If anything, this theme shows that, like most topics taught in writing, there will be an established base of knowledgeable participants already aware of the medium and genre. These students can be used to help teach the topics to others as well as showcase that the medium isn’t entirely strange.

Two students found the timeline found in The 9/11 Report: A Graphic Adaptation particularly effective. I have often used this timeline as an example in class, so this could be why it stuck out to them. The comic takes a lengthy written section with no images and converts it into a foldout
timeline panel indicating the timeline of the four planes that is extremely user-friendly. One can learn the essential elements of the attack in a visual format far easier than in a textual one.

Some students commented on pictures doing more work in less space than words, with students calling on the old “thousand words” cliché. They enjoyed the fact that comics focused on visuals in technical communication, with some even claiming that pictures are easier than words to read or that they preferred comics to traditional instructions. These viewpoints are interesting but not necessarily all that telling for the research questions. The tendency to assume my research is about comics’ superiority prevails in many conversations I’ve had, but the reality is my interest in how it teaches visual literacy. A subsection of my interest lies in students’ interest and comprehension from reading comics.

Most valuable from those who commented on the visuals of comics and how they approached them comes from those that discussed the technical communication power of comics. While some found it a “change of pace” and more interesting way of looking at technical communication, others mentioned that it might not be the best method of instruction. I actually agree with this statement. It’s dubious that comics are more effective for technical communication, but I do believe that teaching comics production is an effective way to teach technical communication.

**Context of Results**

This section highlights the value and difficulty in this study. There just aren’t many other similar studies to compare it to. Multimodality and visual rhetoric both value images and the amount of work they can do in certain situations over traditional writing. Some scholars have commented on using storyboarding in class, which is similar to comics design (see Roger Essley). But when it comes to designing comics, the closest I’ve found are studies where teachers encourage biographical
comics. This approach is similar to mine and has a lot of value, but it usually doesn’t attempt to make design connections to visual literacy and technical communication.

Multimodal writing is a lot of work. In this survey, many commented on the sheer amount of work involved. These realizations that there is a large amount of work in visual assignments comes up frequently and is a common theme in multimodality (see Cheryl Ball). Fears that teaching visual literacy replaces teaching writing are faulty (see Miller and McVee’s “Multimodal Composing In Classrooms”). While it is true that a neglect of genres can occur (which I attempted to make up for by including regular genres in the first half of the semester), writing amounts are not hurt by comics design. Another commonality in the field found in these answers comes from the work involved in transitioning between ideas, panels, and words. Nearly all writing-based textbooks dedicate sections to teaching transitional moves in design and writing (e.g., Anderson’s Technical Writing, which dedicates one section to transitional sentences and another to transitional elements in writing). Another concept that rings familiar is having students with experience in the topic work with those that are inexperienced. Reluctant students can sometimes relate more to a fellow student than the instructor.

**Implications of Results**

The most common response given by students in reaction to design assignments has to be the “I’m not an artist” retort. The problem with this statement is it indicates that art is an inheritable skillset that cannot be learned. Genetics and natural skills might be relative to a mastery of art; the idea that students either can or cannot do art is faulty at its core. Most of students’ lack of artistic ability is due to the same reason they lack any other skill: a lack of practice. The majority of students that participated in this survey were engineers, and among this group few revel in her/his artistic ability—which is odd since so many of them are extremely competent at CAD and creating exploded illustrations.
Juxtaposing is a vital skill in technical communication; be it web-based or print, each document must have a proper balance of words, images, and structure. While the terminology of juxtaposition might not be the choice vocabulary word, the idea often exists. Textbooks deal with this by teaching the principles of design and focusing on writing styles. Comics adds to this the very real notion of having each panel performing the role of proper juxtaposition paired up with how the panels fit within each page and then how the pages worked together to create a cohesive document. Balance and design are ever present when designing comics, which is partly why I value their ability in teaching visual literacy.

Reading technical comics can be valuable too. While many commented on the enjoyment of the reading process, which is helpful, I’m very interested in those that responded to the 9/11 Report timeline. I would like to study elements like the timeline as well as David McCandless’ work with infographics and to see the affordances they offer.

Comics design in the technical communication classroom seems to enable transitions on a level that might not be present in other forms of communication. While extremely valuable for the medium of comics, this skillset applies to all forms of writing and communication, and using comics to focus on the complexity of transitions could strengthen students’ capacity to perform transitional elements in page layout and design instead of just through paragraphs and sentences. Teaching document design transitions between topics and graphics is a part of the pedagogy and at times it can be difficult to teach. When students have to grapple with panels, graphics, words, page design, and overall design hierarchy, they are thrust into designing in a way that seems colorful and fun yet teaches mandatory writing skills. Having a storyline and narrative elements in the document seem to help students create these document connections as well and help them focus on creating instructions that don’t rely on logic leaps between steps because they are seeing what they create as
they do so. While a lot of these kinks are worked out in usability studies, comics lends early support to give writers clues to their outcomes.

Teaching with comics is not as strange of a medium to use as one might expect. Instead, it seems to be slightly familiar to the students and there are usually a few experts in the classroom already. Incorporating them into the discussion allows insight into visuals and comics structure adds additional voices of authority to help teach the medium. While this can happen in any technical writing course, this specific skill seems to be more common to be found among students in my experience. Having students read technical materials in this medium helps prepare them to write concise and precise language.

**Study Limitations**

My topic is unique in many ways, which gives it a disadvantage when it comes to comparisons. While many studies encourage using comics in the classroom, showcase comics’ educational value for reluctant readers, or encourage creative, personal comics, none that I’m aware of attempted to see what affordances were gained and lost in designing comics in a technical communication course to teach visual literacy. Because of this, my research approaches were a bit clumsy and broad at times. I relied on questionnaires that provided valuable information but also hinted at bigger themes that are worth exploring in future research projects or clarifying in the current study.

Questionnaires left some responses vague, which hurt overall understanding. But I couldn’t do interviews and obtain anonymous info. I built in a backdoor into my research to allow interviews for willing participants (usually a third of the class signed up for voluntary interviews), but I got enough information from the questionnaires that such an approach wasn’t needed. I also didn’t think such an approach would be appropriate. Had I done interviews, there was no way to choose the anonymous responses that I wanted to explore and prod more information from that
respondent. And those that volunteered to interview most likely wouldn’t remember their responses from the initial study. I was also suspect of those willing to do interviews: it could be primarily outliers interested in expressing their disdain of the topic or overenthusiastic promoters of comics. These aspects concerned the reliability of the hypothetical interviews. The most troubling aspect was the authority concerns.

Being the teacher of the respondents put me in an uncomfortable position of power. I outlined the IRB-approved methods I used to keep the study as anonymous and void of coercion as possible, but it’s still tough to judge how sincere some of the responses were. Adding to that, if I had done the hypothetical interviews I wouldn’t entirely trust the results for two reasons: I still have the power of a former instructor in their eyes and the time that had passed from the study to when we could conduct interviews was so great that their replies would be suspect. In order to get honest interviews without authority concerns would be to have a secondary researcher that the interviewees didn’t know, do anonymous interviews.

The study was limited to a set amount of time due to it being a classroom-study done during my PhD. Ideally, the results would be sifted from the questionnaires and then revamping the questions to focus on the themes and emerging trends and then revising the study by the feedback and then doing the study for a few more semesters.

Another element that would have strengthened the study would have been to teach a control group classroom. A study could be created that teaches the same concepts—one with comics and one without. Questionnaires could be developed to measure results to see if teaching comics production and analysis offered affordances that traditional methods do not. In this classroom I could have attempted to teach the same methods but without comics. Then students could have answered a questionnaire that I then could have used as a comparison. A thorough analysis and
comparison might help shed light on what true affordances are unique to this progymnasmata comics approach.

I do believe that the questionnaires provided enough reliable data that the research results are valuable and useful. The current results of the study are fixed and this works as an exploratory probe into comics’ affordances. The methods suggested by IRB and qualitative surveys limited the authority to an acceptable level, and the uniqueness of the study is also its strength because it can be just the beginning.

**Final Implications**

This conclusion achieves two purposes: first it answers my four main research questions individually and second it looks at key findings unique to comics or how comics improves certain key findings.

**Research Question Answers**

How well do the results support the research questions? I will address each specific research question before concluding.

Can comics be used to teach visual literacy in technical communication? The short answer: yes. The results show that students picked up on many instructional and descriptive techniques from reading the comics and attempted to apply them to their personal project. While the study didn’t ask overarching questions to transcend comics to technical communication, the students’ answers and the emerging reading themes showcase that comics can be used to effectively teach instructional skills.

Does having students design comics teach the necessary visual literacy (visual rhetoric and multimodal) skills required for technical communication? Once again, the simplified answer appears to be yes. Students picked up on document design elements, transitional statements, juxtaposition, technical visuals, and other valuable skills. Most of these responses were unsolicited since students
didn’t know the purpose of my study, which speaks to the value that teaching comics can have for applying overall technical communication goals. It does not mean, however, that comics are more effective than regular methods or that they are a necessary format to teach. However, their wide range of implications—such as low cost, availability, wide software approaches, etc.—should be enough to entice further study.

How do students respond to creating and studying comics in technical communication situations? Some students found the process unhelpful, but most responded favorably. They found that comics seem to cater to showing “big picture” processes and the reliance on visuals to be especially helpful in designing and understanding. My goal of having them create their own images instead of relying on image searches was also successful—very few relied on stock images to create their final draft. Any method that encourages students to design their own technical images contains value for future development in my mind, especially since comics are a growing trend in instructional and descriptive genres.

Can using comics as a medium teach critical pedagogy techniques, such as discussing power, authority, and otherness? This question is harder to answer. While this question fueled my research early on, it lost importance in my eyes as the study progressed. I am also not convinced that the goal of critical pedagogy is to explicitly teach such skills—it is meant as a more subconscious approach in helping students adapt their worldview for writing purposes. Some responses favor the idea that they picked up on critical pedagogy aspects, like those that mention openness to new ideas and knowledge distribution. The part of my study that focused on composition seemed to showcase this goal a bit more explicitly.

**Key Findings for Comics’ Uniqueness**

A colleague asked me what do comics offer over other visual mediums being used to teach visual rhetoric and multimodality. In order to determine this, I have created a table that focuses on
five elements that appeared throughout the implications of analyzing students’ data. The table introduces the topic on the left, answers whether traditional assignments can teach the skill, and adds what comics adds that is unique regardless of whether other assignments teach the skill.

**Table 1: Key Ideas Taught**

<table>
<thead>
<tr>
<th>Key Ideas Taught</th>
<th>Other Assg. Teach It?</th>
<th>But Comic Adds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Writing Elements, such as:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Transitions</td>
<td>Yes</td>
<td>• Visual Transitions (few mediums can teach students to design with visual transitions as effectively)</td>
</tr>
<tr>
<td>• Planning</td>
<td></td>
<td>• Hierarchy in each panel, hierarchy for each page, and global hierarchy is a requirement in every stage</td>
</tr>
<tr>
<td>• Organization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tone and Narration</td>
<td>Yes</td>
<td>• Writing in a conversational style. This style helps writers become aware of the traditional authorless tone of most technical communication.</td>
</tr>
<tr>
<td>Core Writing</td>
<td>Yes</td>
<td>• Challenging accepted genre conventions.</td>
</tr>
<tr>
<td>Visuality Exploration, such as:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Using original graphics</td>
<td>Maybe</td>
<td>• Original graphics. Students can’t rely on clip art or Google Images as easily as with other assignments. With comics they have to create their graphics to fit their goals.</td>
</tr>
<tr>
<td>• Using original design</td>
<td></td>
<td>• Document design. Students can rely on software templates, but they have to decide on the best way to visually incorporate their information into an assignment.</td>
</tr>
</tbody>
</table>
Juxtaposition

<table>
<thead>
<tr>
<th>Maybe</th>
</tr>
</thead>
<tbody>
<tr>
<td>• More visual hierarchy. As mentioned above, students have to completely engage in juxtaposing graphics within one another and design them so they form a cohesive story. Not only do they design each image, but they have to place it within a larger story and text. Comics may teach this skill better than any other medium or genre.</td>
</tr>
<tr>
<td>• Comics rule of presentation. This is the concept of an image and text working together to present one message, not repeating each other. This is a universal skill that is valuable in technical documents and especially in presentations.</td>
</tr>
<tr>
<td>• Juxtaposition in general. The value of text placement, multiple visual elements within each visual, and each visual forming a larger visual is extremely valuable.</td>
</tr>
</tbody>
</table>

**Recommendations for Future Research and Conclusion**

This section addresses future research possibilities based on my study as well as comics in general. First it looks at several suggestions, including comparative studies, assessment, and additional educations comics research. Then it will look summarize my conclusions and look to the future.

**Possible Future Studies**

This study can take multiple paths from here. A lengthier study relying on similar progymnasmata and critical themes could be established and observed over years to get a larger set of data. Technical writers in institutions with less access to software and computers could be studied to see if hand drawing could produce similar results to these digital designs. This would really help
understand digital divide and the critical thinking skills needed to create a juxtaposed document such as this one.

A comparative study could be done with objects that exist in both mediums (such as the timeline of the terrorist attacks in *The 9/11 Commission*) to study affordances in the two mediums. This would allow a very serious discussion on the power of visuals in displaying technical information. Having students take their traditional instruction documents and their comics instructions and carrying out usability studies with both processes and recording the results would be a fascinating classroom study too. This approach would create two learning techniques: having students carry out a study that seeks to gather data they observed from others and explores their interpretation of the data as well as being an observable pedagogical approach to teaching usability studies.

Another step to take would be to look into the students’ results themselves and create an assessment. While I graded them according to the criteria established in class, a broader approach to assessment in relation to common technical communication goals could be done. I briefly considered including a section on assessment of the comics but decided to focus on the students’ interpretations.

Many comics focus on scientific and philosophical concepts that may simplify reading and understanding. But without having introduced these to students they have no way of knowing that these exist and therefore would not be able to compare their learning process. While teaching business communication and science communication I toyed with the idea of providing a few tomes of comics dealing with economic and science topics but decided against it since my research is more interested in visual literacy in design than in reading comprehension. Still, research here would be appreciated and if more interest in using comics to teach topics occurs in academia, then a study that compares the comics to traditional texts might be helpful.
Comics’ Future in Technical Communication

This study has not proven that comics are superior for teaching visual literacy and technical writing, but it has proven that comics should be taken seriously as educational tools. It has shown that reading and designing comics can teach visual literacy techniques and could be a potential tool for teaching visuals, multimodality, visual rhetoric, juxtaposition, transitions, and document design. Comics is not the only way to teach these methods, and my study never sought to demonstrate that it was. My goal was merely to showcase its power in teaching visual literacy, both in the reading and in the design stage. While it didn’t help everyone, the majority seemed to respond favorably and their responses indicate that they picked up on my unspoken goals of teaching them how to design in a more original, effective manner. Many traditional elements of writing are still found in designing comics, so the concern that a visual medium will replace writing skills isn’t necessary.

While comics seem to teach visual rhetoric principles, as I had hoped, they also offer unique aspects that make them advantageous and worth further exploration. Comics teach visual hierarchy on multiple levels that encourage an awareness of document design, graphic placement, and text and graphics hybrids. They help students become aware of tone and narration techniques in the authorless field of technical communication, which could strengthen their notions of tone in general. While most technical writing encourages students to get to their central message, comics encourages a remediation process that helps students arrive at their message’s core. This is true of their entire document as well as each individual sentence they write, because space is valuable. Additionally, they learn core-writing skills with graphic design. Comics helps students explore visuality by encouraging the design of both original graphics and thoughtful design. Students are less likely to rely on stock photograph and clip art when they must adapt a topic graphically by their own script. Finally, the juxtaposition skills students gain by designing comics allows them to weave graphics, text, and design together in a cohesive, effective fashion. This skill transfers to other visual communication.
This study is only the beginning. How well students will apply this knowledge to other aspects of technical communication is yet to be seen and a follow-up study exploring this would be beneficial. Looking at the potential for comics in the technical classroom has potential and further applications and studies in the topic are welcome and encouraged. Other instructors could follow this format and teach technical comics production in the technical classroom to similar effects and for new ends, including for critical analysis (thinking about gender, race, culture) in technical communication. The future of comics in technical communication has a bright future and I am excited to see what directions it will take.
WORKS CITED


- - -. “Rhetoric and Ideology in the Writing Class.”


APPENDIX A: INFORMED CONSENT & QUESTIONNAIRES

INFORMED CONSENT DOCUMENT

Title of Study: Sequential Rhetoric: Combining Progymnasmata and Critical Pedagogy to Teach Comics as Visual Rhetoric

Investigator: Robert Watkins

This is a research study. Please take your time in deciding if you would like to participate. Please feel free to ask questions at any time. If any of the questions make you uncomfortable, you may skip those questions.

INTRODUCTION

The purpose of this study is to see if comics provide a more accessible format of teaching visual rhetoric and multimodality and if comics can be used as a way of composing research findings. The first step towards achieving this is to follow the ancient rhetorical concept of progymnasmata to teach students. This method, which is basically a step-by-step approach to teach pupils more complicated ideas by building on their previous knowledge, is a perfect way to introduce the concept of comics being capable of presenting more than just juvenile stories. I am attempting to follow a progymnasmata approach to teaching students comics as a means of technical communication. The long-term goal is to both introduce the concept of comics as a means of publishing research to current students and the more imminent goal is to see what affordances teaching comics composition in the technical communication classroom allows. I want to learn what helps and doesn't help students in the process and how they respond to technical communication presented in a comics format.

DESCRIPTION OF PROCEDURES

If you agree to participate, you will be asked to answer a survey. The questions will mostly be open-ended, but they’ll essentially ask the following

- Have your perceptions of comics changed from the beginning of this semester to now? Why or why not?
- In what ways have they remained the same?
- What elements, if any, of composing in comics did you find to be the most difficult?
- What elements, if any, were simpler than regular composition?
- Did anything surprise you about the process? If so, what?
- In studying comics this semester what differences did you find between our traditional instructions and the comics, such as those by Will Eisner and Scott McCloud (for example, what was easier to understand in traditional instructions and what was easier from the comic book, what was more difficult, what was different, etc.)?
- Did anything in comics composition or reading facilitate your reading? If so what?
- What was the most difficult aspect of composing your own comic? Why?
• What differences stood out to you between the composition of traditional texts and your comics?

Your participation will last for a total of ten to fifteen minutes typing responses to these questions.

RISKS
While participating in this study you may experience the following risks: none.

BENEFITS
If you decide to participate in this study there will be no direct benefit to you. It is hoped that the information gained in this study will benefit society by allowing multiple modes of written research to be available.

COSTS AND COMPENSATION
You will not have any costs from participating in this study. You will not be compensated for participating in this study.

PARTICIPANT RIGHTS
Your participation in this study is completely voluntary and you may refuse to participate or leave the study at any time. If you decide to not participate in the study or leave the study early, it will not result in any penalty or loss of benefits to which you are otherwise entitled.

CONFIDENTIALITY
Records identifying participants will be kept confidential to the extent permitted by applicable laws and regulations and will not be made publicly available. However, federal government regulatory agencies, auditing departments of Iowa State University, and the Institutional Review Board (a committee that reviews and approves human subject research studies) may inspect and/or copy your records for quality assurance and data analysis. These records may contain private information.

To ensure confidentiality to the extent permitted by law, the following measures will be taken, your name will not have to be written on the results. If the results are published, your identity will remain confidential.

QUESTIONS OR PROBLEMS
You are encouraged to ask questions at any time during this study.

• For further information about the study contact Robert Watkins by email at robwat@iastate.edu.

• If you have any questions about the rights of research subjects or research-related injury, please contact the IRB Administrator, (515) 294-4566, IRB@iastate.edu, or Director, (515) 294-3115, Office for Responsible Research, Iowa State University, Ames, Iowa 50011.
**PARTICIPANT SIGNATURE**
Your signature indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document, and that your questions have been satisfactorily answered. You will receive a copy of the written informed consent prior to your participation in the study.

Participant’s Name (Printed) ________________________________

_________________________________________ (Participant’s Signature) ___________________________(Date)

Would you be interested in a voluntary additional interview? If so, then add your email below. If you’d rather not, then simply do nothing besides sign the release above.

_________________________________________ (Email Address)
**Interview Questions**

These will be the basic questions along with any follow-up questions that may occur during interviewing.

1. Explain to me your past experience with comics.
2. Describe what you gained (or didn’t) from reading the Will Eisner and Scott McCloud comics in the class.
3. What difficulties did you face when composing the comics project? What surprised you?
4. What suggestions would you give for future comics composition use in technical communication?
Survey
Please answer the questions below as accurately and honestly as you can. There is no correct or incorrect answer; the goal is merely explore your thoughts on the topic of educational comics.

1. Have your perceptions of comics changed from the beginning of this semester to now? Why or why not?

2. In what ways have they remained the same?

3. What elements, if any, of composing in comics did you find to be the most difficult?

4. What elements, if any, were simpler than regular composition?

5. Did anything surprise you about the process? If so, what?

6. In studying comics this semester what differences did you find between our traditional instructions and the comics, such as those by Will Eisner and Scott McCloud (for example, what was easier to understand in traditional instructions and what was easier from the comic book, what was more difficult, what was different, etc.)?

7. Did anything in comics composition or reading facilitate your reading? If so what?

8. What was the most difficult aspect of composing your own comic? Why?

9. What differences stood out to you between the composition of traditional texts and your comics?

10. Would you like to add any additional comments or questions?
APPENDIX B: STUDENT COMICS EXAMPLES

These examples represent multiple modes for production and varying degrees of effectiveness. Their inclusion doesn’t mean they are exemplar or poor, but instead are included due to students signing a release form.

Benjamin Meier:
You'll need these things before we get to work.

Materials:
- Computer with updated internet browser
- Internet Connection
- Something that is broken and needs repair
- Valid Iowa State Net-ID

Direct your internet browser to www.housing.iastate.edu

Once a Cyclone Always a Cyclone

Click on the square in the bottom right corner that has a wrench and screwdriver on it. This will take you to the DCR SERVICES REQUEST webpage.
Select the area of campus using the menu on this page for which you are reporting a service request. For Friley Hall, select Union Drive Residence Association.

NOTE: It may take a long time for this page to load. Be patient.

Select the building for which you are submitting the service request using the drop-down menu.

Complete the service request form by filling in each of the fields.
After the page loads, find the link in the center of the page that reads **ON-LINE WORK ORDER SYSTEM** and left click on it.

Choose the option in the center of the page that describes you. **Are you a RESIDENT or STAFF MEMBER?**

Choose the link labeled **LOG A REQUEST** at the top of the page.
**Request Form for FRILEY**

- **Name:** Steven Leath
- **Phone #:** 515-294-2042
- **E-mail Address:** sleath@iastate.edu

**Enter your full name in the NAME field.**

- **Phone #:**

**Enter your 10 digit phone number in the PHONE #; field.**

- **E-mail Address:**

**Enter your COMPLETE Iowa State University e-mail address in the E-MAIL ADDRESS field.**

**Choose the specific location for which you are requesting service using the selection box.**

**HINT:** This is done best by first selecting the field and then typing the room numbers and letters. The options will be sorted automatically for you.

**Type a short, specific description of the problem you would like resolved and any details that would assist the Facilities Management staff in completing your request in the REQUEST: field. Then click SUBMIT.**
A new confirmation page will load and provide you with your request number and the current status of your request.

CONGRATULATIONS! You have successfully submitted a Service Request to Facilities Management for repair. You will receive an e-mail of confirmation or denial at the address you provided within 24 hours.

If you have more questions regarding your service request or had difficulties completing a service request, contact the service center at 515-294-3322.
EASY LUNCH
HOW TO MAKE A GRILLED TURKEY AND CHEESE SANDWICH

BY: KEVIN GUINAN
IF IT'S LUNCH TIME AND YOU WANT A WARM SANDWICH, THEN GET READY TO MAKE A GRILLED TURKEY AND CHEESE SANDWICH. IT REQUIRES MINIMAL COOKING ABILITIES AND TAKES LESS THAN 10 MINUTES TO PREPARE. LET'S GET STARTED!

OBTAIN THE FOLLOWING:
1. ELECTRIC GRIDDLE
2. BUTTER KNIFE
3. SPATULA
GROCERIES

OBTAIN THE FOLLOWING:

1. 3 SLICES OF TURKEY
2. 2 SLICES OF BREAD
3. 1 SLICE OF CHEESE
4. 1 TABLESPOON OF BUTTER

TIME TO COOK

PREHEAT THE GRIDDLE TO 375 DEGREES FAHRENHEIT.

WARNING:
DO NOT TOUCH THE SURFACE OF THE GRIDDLE WHEN IT IS POWERED ON.
Place sliced turkey on griddle as the griddle is heating up to warm the turkey.

Spread butter on 1 side of each slice of bread as shown in the figure below.

Place 1 slice of cheese on un-buttered side of bread as shown.

Add warmed turkey from griddle to sandwich.

Once the griddle is at full temperature, place one side of the sandwich on griddle.
AFTER 45 SECONDS, CHECK TO SEE IF SANDWICH IS GOLDEN BROWN. IF IT IS, FLIP SANDWICH AS SHOWN. IF IT IS NOT, WAIT UNTIL SANDWICH IS GOLDEN BROWN.

DO NOT LET SANDWICH BURN

KEEP SANDWICH ON GRIDDLE FOR 45 SECONDS, OR UNTIL GOLDEN BROWN, THEN REMOVE FROM GRIDDLE.

CAUTION:
BE SURE TO TURN OFF GRIDDLE WHEN IT IS NOT BEING USED.

LETS EAT!
HOORAY! YOU ARE NOW READY TO ENJOY A QUICK, EASY, AND DELICIOUS GRILLED TURKEY AND CHEESE SANDWICH!
Aleksander Poniatowski:

**Hookah on a lazy afternoon**

1. Hey man, are you trying to hookah?
2. Yeah, but I don't know what I'm doing.
3. There's alright. Come to the kitchen with me and we'll get you started.
4. Great! Thanks dear.
5. I need to add water to the base with water.
6. How much water?
7. Roughly to submerge the chimney, approximately 1 inch.
8. Someone told me that it should be sealed with the base, that all of it should be sealed with the base, is this true?
9. Sorry, I haven't been told what, now what?
10. You're going to want to pour the tobacco out into the bowl, on top of the bowl, convince.
11. Hey, this thing is a tinfoil tray! It knows what it's doing!
No, no, no. You have to put them evenly around the foil, like this!

Next we're going to want to put the bowl on top of the foil and...
Let's have some fun now. Time to light the coals.

Oh boy, time to play with fire!

Ouch. Hot, I got it.

Be careful, because the tongs may still get hot.

That was easy!

Now just wait about 5 minutes and... Hey, are you starting without me?

**Puff Puff**. Couldn't help it bro. Turn on some tunes and grab a chair.

**Puff** So... what's the plan?

Just relax man. **Puff Puff**

"Sein only good vibes"
Paul Uhing:

How to Solve a 3x3x3 Rubik’s Cube:

The Layer by Layer Approach

I just can’t solve this puzzle. It’s so frustrating!

You can solve this Rubik’s Cube with a little help.

Really, I’ve been trying to solve this forever.

With these instructions and a little help you’ll be fine.

Are you sure this won’t take weeks?

Your first solve should take about 30-60 minutes. With practice it will eventually take you less than 5 minutes.

Cool! I’ve always wanted to show my friends I can solve this thing.

Do I need any knowledge or tools to solve this cube?

You only need yourself, a Rubik’s Cube (it doesn’t need to be Rubik’s Brand), and these instructions

Rubik’s Cube (Scramble it first)
**Notes on Notation**

Notation: The single letters in this image represent the face in notation. Arrow shows the direction to rotate the face, clockwise by 90° each time that the letter appears. A prime (') means to rotate in the opposite direction.

Ex: F' would rotate the front face counter-clockwise by 90°, where F would mean to rotate the face clockwise by 90°.

Algorithm: A string of notation that purposefully rearranges the pieces of the cube.

Ex: RURURUR'

---

**Layout of the Cube**

Notice that red and orange; green and blue; and yellow and black are opposite of each other.

Orient: This means to rotate faces of the cube in order to get the required orientation to use an algorithm.

How is any of that going to help me?

You'll see in time, let's get started by picking a side to be the bottom. It is best to pick black as a bottom for beginners.

---

**First Moves**

Rotate the edges that belong on the bottom to the opposite side. It will look like the sketch above.

Note: The un-shaded sides don't matter.

Algorithm 1: F F

Match an edge to its center. Use that face as the front face. Then use Algorithm 1. This will be repeated four times.

Once complete the bottom and sides should look like this.
**Left Side Corner Case**

Algorithm 2a: \( U F U' F' \)

Look for bottom corners on the top layer with black on a side face. Orient the corner so it looks similar one of these the use the matching algorithm. Repeat until all there are no corners like this or there are no corners can be oriented like this.

Algorithm 2b: \( U' F' U F \)

**Right Side Corner Case**

**Algorithm 3:** \( R U U R' \)

Orient the cube as shown and use Algorithm 3. Then use the correct corner case to solve the corner.

**Algorithm 4:** \( R U R' \)

Orient the cube as shown and use the Algorithm 4. Then use the correct corner case to solve the corner.

**Bottom**

Side

This is how the first layer looks when it is solved. Now it is time to move to the second layer.

**Left Edge Case**

Algorithm 5a: \( U' L' U L U F' F' \)

Look for edges in the top layer that belong in the second layer. Orient one of these edges as shown. Look to see if whether it needs to be moved to the left or right and use the related algorithm. This will need to be repeated four times. When no more of these edges are in the top layer got to the next page.

**Right Edge Case**

Algorithm 5b: \( U R U R' U' F' F \)
Algorithm 6: R U' R'

If this happens orient the cube as shown and use Algorithm 6. You will need to resolve the corner and then solve the edge.

Solved Second Layer

The first two layers solved. There is only one layer left!

The Fish

(top View)

If the top of your cube looks exactly like this (one corner and all four edges) move to Solving the Fish on the next page.

The Line

(top View)

Follow the arrow if only the top edges look like this line.

The L (top View)

Follow the arrow if only the top edges look like this L shape.

The Dot

(top view)

Use Algorithm 7 and then use Algorithm 8.

The Cross

(top view)

Go to the next page.

Algorithm 7: F U R U' R' F

Orient the cube and use Algorithm 7.

The Cross

This is the minimum outcome. The top of the edges may also match so look at the Fish above before moving to the next page.

Algorithm 8: F R U' R' U' F

Orient the cube and use Algorithm 8.
**Solving the Cross**

Algorithm 9: R U R’ U U R

Orient the cube so that the front face has no yellow squares on it. Then use Algorithm 9, reorienting each time, until it matches the Fish.

**Solving the Fish**

Algorithm 10: R U R’ U U R’

Orient the cube so that it looks like the cube on the left. Use Algorithm 10 until it looks like the cube on the right (2 times maximum).

**Castles**

If you have one of these options then you have a castle. If not you will do the same thing. If you have four follow the arrow.

Algorithm 11: R B B R F’ B B F

If you have castles orient the cube as shown and use Algorithm 11. If not just pick a fount and use Algorithm 11 you will have to do this twice.

**Solved Castles**

When done the cube should look like this. One side or all the sides might be solved. Check before moving one.

If you have a solved side (you can rotate the top layer to get this) orient the cube as shown, otherwise pick a font face and determine if the to edge needs to be opposite or adjacent.

**Opposite Center Case**

Algorithm 12a: R U F B’ R R F B U R R

Pick the proper algorithm for your front face. If the cube isn’t solved reorient the cube and pick the algorithm for the new orientation.

**Adjacent Center Case**

Algorithm 12b: R U F B’ R R F B U R R

**Solved!**

The only thing you many need to do is orient the top layer. Congratulations on solving the Cube!
Sweet! I actually solved this cube!

With some practice you will get faster and you will no longer need these instructions.

I'm going to practice so I can show this off to my friends.

Trouble Shooting Tips

If the cube isn't quite solve just try again. Until you memorize the algorithms it takes a lot of practice and some patents.

If you mess up an algorithm it is easier many times to start from the beginning again.

Good Luck!
&
Happy Cubing
Today's Lesson:

Creating a Simple Website!

To start writing a website, a text editor and some basic computer skills are needed. Most websites are written in HTML. To write HTML, you can use a text editor such as Notepad or Text Wrangler.

1. Open the text editor and save a file as .html

2. At the top of the document, `<Document.html>` is needed.

3. After the `<Document.html>`:

4. Add the head tag after the html tag.

5. The head tag contains things such as the website title.
Add a paragraph tag:

```html
<p>Write the body here.</p>
```

1. **H1** is the biggest of
2. **P** is the smallest.
3. **H6** headings.
4. **P**

Start

Now that we have text, we should add a list.

A list is a way you can make bullet points or a numbered list in HTML.

- Line one
- Line two

Start

To create an ordered list, we use elements called an ordered list, which has the tag `<ol>`.

To create bullet points, use an unordered list with the tag `<ul>`. Let's make an unordered list.

- First point
- Second point

Notice how after we put an bullet point `<li>` we end the `<ul>` tag. We can make an ordered list with `Li` as well. Each point needs a `li`.

End your document.
To end our document, we close the remaining two unknown tags. In this case, the list <ul>, the paragraph <p>, the body <body>, and the html <html>.

Web site Hosting:
To host a website, you will need an...

Website Hosting:
To host a website, you will need a...

For more detailed instructions, visit instructions siti44, com
John Deutsch:

Routine Automotive Maintenance:

How to change your engine oil and filter

By: John Deutsch

Hi guys, my name is Jim! Changing the oil is a simple task that anyone can do with proper instructions.

Before I begin, I need to gather some essential tools. This car creeper is a pedal chair that will help you get under the vehicle.

Car Creeper

NOTE: Asking a friend to help guide your car onto ramps is always a good idea.

TIP: Don’t be afraid to ask an experienced friend for help!

Plan to set aside an hour today, but as you become more familiar with your vehicle, the time it takes will drop significantly.

Changing your own oil is a great way to save money and keep your vehicle running smoothly. Typically, it is a good practice to change the engine oil and filter every 3000 miles.

Oil Filter Wrench - Oil Filter - Oil Pan - Engine Oil

Be sure to check your car’s owner manual to find the correct type of oil and filter.
Once the oil is finished draining, I can re-install the drain plug in the crank case where I took it out of. Next, I will remove the old oil filter with my wrench.

According to my car's owner manual, my car takes 4 quarts of 5W-20 oil.

Tip: While under the car, check for anything loose, leaky, or broken that might need attention.

It's important to use the right size wrench when removing the plug to avoid spilled oil. Take care to line up the oil pan with the drain plug.

Now that I've got everything back in place, I'm ready to re-fill the engine with fresh oil.

Lying under the car on the creeper, I can see all the important things. First, I need to get a wrench to remove the oil plug.

Make sure the o-ring on the old filter is intact and not stuck to the engine. Then, apply a thin film of fresh oil to the new filter's o-ring.

Note: Only tighten the filter by hand!
Before I'm done, I need to double check my work. I'll start the car and let it run for 30 seconds to let the oil circulate.

CAUTION: A low oil level can permanently damage the engine.

Lastly, I'll record the date and mileage so I know when to change oil next time.

Thanks everyone, see you in another 3000 miles!
Marshall Hilgemann:

A Guide to Making Pistachio Biscotti:

Hi, I'm a pistachio, an ancient tree nut native to the Middle East. People have been eating me for centuries!

I can be a great addition to biscotti, a classic twice-baked Italian treat. It pairs well with coffee or dessert wine.

Biscotti usually features almonds, but why should they have all the fun? Many ingredients can go in biscotti—other nuts like pistachios, dried fruit, or even chocolate. Well, let's get crackin' and see everything you will need.

We'll need an oven, two bowls, a baking sheet, fork, sharp knife, measuring cups and measuring spoons.

Ingredients and amounts will be:
- 3 cups flour
- 1 1/2 teaspoons baking powder
- 1/4 teaspoon salt
- 3 eggs
- 2 cups pistachios
- 1/2 cup butter
- 1 cup sugar
- 1 teaspoon vanilla
- 1 teaspoon almond extract
- 1/4 teaspoon anise

Flour, sugar, eggs, butter, salt, and vanilla are all basic ingredients for baking. The pistachios add a unique flavor and texture to the biscotti.
Get the oven preheating so it’s ready for later. Set the rack to the center and temp to 325°F.

In a bowl mix flour, salt, sugar, and baking powder.

Whisk together eggs, melted butter, anise, and extracts in the other bowl.

Gradually add wet ingredients to the dry and continue stirring.

The dough will be much drier than a bread or cookie dough. This is ok—the dough should be crumbly but still be able to clump together.

Now for my favorite part—adding nuts to the dough.

Discard outer shells

Shell and chop the nuts. Then add them to dough.

Form the dough into a flattened log shape.
Bake 30 minutes or until edges slightly brown.

Take out the lug and let cool on pan 15 minutes.

Bake the slices another 10 minutes on side.

Flip the slices over and bake another 10 minutes.

Well that's it, they are finished. You did great! Don't worry if the biscotti seem a little hard at first. They should be hard and crumbly. This makes them ideal for enjoying as the Italians do — by dunking them in your beverage of choice. This guide is just the start, you can try adding lots of different ingredients until you find your own favorite variety. Enjoy!
Szuyin Leow:

**How to Prepare a Belay System**

**Back in the Day...**

GOMEDAY, I WILL CLIMB THAT MOUNTAIN!

**But before I can scale mountains, I need to learn how to belay. And before I learn how to belay, some practice and climbing experience would be helpful.**

Proper climbing equipment is also necessary.

- Belay device
- Chalk bag
- Locking carabiner
- Climbing rope
- Climbing harness
- Climbing shoes

PROPER CLIMBING CLOTHES ARE ALSO ENCOURAGED. (NOT TOO LOOSE, NOT TOO TIGHT... JUST RIGHT!)
YOU’LL ALSO NEED A FRIEND TO CLIMB WITH YOU!

CAUTION: PROPER TRAINING RECOMMENDED BEFORE BELAYING ANOTHER CLIMBER.

CLIMBING LESSONS HERE!

GIVE YOURSELF ENOUGH TIME TO PRACTICE AT LEAST 1-2 HOURS!

NOW, WE'RE READY TO LEARN HOW TO SET UP A BELAY SYSTEM!
STEP 1: Identify who is climbing and who is belaying

STEP 2: Set-up top-rope climbing route

NOTE:
Most routes are already prepared at climbing gyms. If climbing outdoors, you will have to set up your own route.

STEP 3: Using the rope closer to the wall, tie the climber in with a Figure-8 Follow Through knot

Tie a Figure-8 knot in the rope about 3 feet away from the end of the rope (Figures 1-4).

Feed the running end of the rope through the climber's harness and back through the Figure-8 knot just made (Figures 5-8).
STEP 4: Set up the belay system

A. Feed a bight of rope through the smaller end of either hole on the belay device.

WHAT'S A BIGHT?

IT'S A FOLD OR LOOP OF ROPE!

B. Clip the bight of rope and the loop of the belay device through a locking carabiner.

SAFETY IS KEY! MAKE SURE THE CARABINER IS LOCKED!

C. Clip the carabiner to the belayer's harness to attach the rope and the belay device.

LOOK! WE DID IT!

THAT'S A GREAT FIGURE-8 FOLLOW THROUGH KNOT AND BELAY SYSTEM SET-UP!
STEP 5: Conduct safety checks

SAFETY FIRST! LET'S CHECK OUR GEAR...

OUR HARNESSES ARE TIGHT ENOUGH SO THAT THEY CAN'T MOVE PAST OUR HIPS AND OUR SHOES ARE TIED. LOOKS GOOD.

OH, GOOD CALL! CAN'T FORGET THOSE SAFETY CHECKS!

THE KNOT IS TIGHT AND DRESSED, THE CARABINER IS LOCKED, AND THERE ARE NO EXTRA TWISTS IN THE ROPE... I THINK WE'RE READY!

STEP 6: Exchange verbal commands

ON BELAY...

BELAY ON...

CLIMBING...

ONCE THE BELAY IS SET UP, EXCHANGE VOCAL COMMANDS BEFORE STARTING TO CLIMB...

CLIMB ON!
Nick Krahenbuhl:
Well, a 3D printer is like a document printer, only instead of a stack of papers, you get a model of your idea... that you can hold, inspect, and play around with.

WOW! That's just what I need! How do we get started?

First we need a 3D model to print. These can be downloaded from the internet or created in a 3D modeling software package.

Now that we have a model that we want to print, we need to bring it into the software for the 3D printer.

Why do we need another piece of software?

A 3D printer needs specific instructions to tell it what to do.

But seriously, what information does a 3D printer need?

A 3D printer builds a part in layers, kind of like stacking sheets of paper.

Kind of like my wife!

Each layer is a section of the part. The 3D printer needs information about the shape of each layer to build an accurate part.

But if it builds up, won't it topple over like that popular table top tower game?

Most 3D printers incorporate a method to support the part to keep it from toppling over.
But what if a part is too large to fit in the printer?

You can either scale the part down or print it in sections and glue the pieces together.

Excellent! There doesn't seem to be any limitations to what you can build with a 3D printer.

Not too many. The biggest limitation is material selection.

Most 3D printers use plastic, but if that's not your bag, some high-end printers can use other engineering materials.

So, what do we do while the printer is building the part? Do we need to watch it?

No, it should work without supervision, unlike some people around here.

I guess you could use the time to get caught up on your TPS reports!

You know the Bobs have no imagination & they'll want something that looks like the finished product.

No prob Bob, er, uh Peter. Once the part has finished printing it can be finished in several ways. How detailed is up to you.

This is great! I can't wait to print the part to take to the Bobs!
Danielle Kimler:
So you and the fairy take off toward North Clock Tower.

The king fairy warns you, "Watch out! There may be a monster in the park."

Just outside of the park's boundary, you see a small boy trying to fly a balloon.

"I know it doesn't look much, but just go with it!"

The king fairy grants you magical abilities, allowing you to fly for long-range Bubble Attacks. This is about to come in handy.

"Bang!"

Before you just popped his balloon, he was ready to go.

If you can find a way to make friends with Bubble tomorrow, I'll let you into our secret clubroom. Ready set go!

1 2 3 4 5

Well, since these exits seem to have forgotten how to lead, let's just head back. Also, it's time.

And so, with the impossibly difficult password in mind, you enter the kids' clubhouse.

Conveniently enough, the kids' club house is actually the entrance to the clock tower observatory. You head in to find your friend搁 at his telescope.

Hey! From my new telescope, I see a giant monster up on the clock tower. Come help me!
DO YOU SEE THAT? A MOON'S PAIN ONLY FADE WITH TIME, THEIR PRECIOUS BLOOD, WHY DON'T YOU TRY TO GET A LADY?

SO, YOU CAN'T GET IN? WE APPROACHED THE CLOCK TOWER, YOU AND THE WASP; THEN IT'S A MOON'S DUTY TO SEND BACK LOVE, LADY. YOU CODED TO THE CLOCK TOWER ONCE. HOW FAR IS IT FROM THE CLOCK TOWER?

Thanks, Tim.

NO, IT'S YOU TWO, RIGHT?