

**NET GENERATION RESEARCHERS: AN INQUIRY INTO HYPERTEXT READING
AND RESEARCH STRATEGIES OF FIRST-YEAR COMPOSITION STUDENTS**

by

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ABSTRACT

Hypertext and hyperlinks are present on almost every web site or electronic document. As integral components of visual rhetoric, they are foundational to any discussion of technology and literacy. This inquiry is designed to explore first-year composition students' advances in technological literacy, specifically hypertext reading and research strategies. To accomplish this, a hypertext-reading project was designed to investigate the ways in which first-year composition students assimilate and employ hypertext information as a source from which they must extract information to use in the development of an argument.

A program, designed and written specifically for this project, presented research participants, 76 students enrolled in second semester first-year composition, the components of hypertext reading as an online reading and research activity. Participants first completed a technology survey designed to reveal each participant's prior experience and self-perceived expertise with current technology, after which they completed a two-part exercise consisting of a hypertext reading assignment and a post-reading questionnaire. Participants were instructed to use their reading to inform and develop a thesis for an argument. The article selected for this study was "Illegal Immigration," accessed by navigating to http://en.wikipedia.org/wiki/Illegal_immigration. The article discusses a current controversial national concern, illegal immigration. While the use of Wikipedia, an online user-edited encyclopedia, often raises credibility concerns, the site in general offers excellent examples of hypertext reading that include textual as well as graphic links.

In the analysis, it is revealed that while the study group rated themselves highly proficient users of Internet search engines, email, social networking, and word processing applications, the

majority initially did not recognize a relationship between the actions they take as users of those applications and hyperlinks or hypertext. Post-reading responses revealed that the majority of the group read the article from top to bottom with few to no diversions. Furthermore, while most *did* recognize the hyperlinks as information portals, they made conscious decisions to *not* access the links for a variety of stated and implied reasons.

This research involved a relatively small student sample that defines the limited scope of the findings; however, the data suggests attitudes and expectations of this group that may reflect student populations with similar or shared demographics. These data are used to inform potential pedagogical application suggestions, including the usefulness of technological proficiency assessments and research using technology within the classroom as well as in external assignments.

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ACRONYMS AND ABBREVIATIONS

AOL	America Online
CCCC	Conference on College Composition and Communication
CD/DVD	Compact Disc/Digital Versatile Disc
ECAR	EDUCAUSE Center for Applied Research
ENC1102	English 1102
html	Hypertext Markup Language
http	Hypertext Transfer Protocol
idk	I don't know
IM	Instant Message
iPod [®]	Portable digital audio players designed and marketed by Apple Computer
LAN	Local Area Network
MMO	Massively Multiplayer Online
NCTE	National Council of Teachers of English
MSN	Microsoft Network
PDA	Personal Digital Assistant
PID	Personal Identification
UCF	University of Central Florida
URL	Uniform Resource Locator
Wi-Fi [®]	The technology of wireless local area networks licensed by the Wi-Fi Alliance
www	World Wide Web

CHAPTER ONE: INTRODUCTION

The Impact of Available Technology

Many first-year university students arrive in the composition classroom armed with a cell phone, laptop, iPod[®], and personal digital assistant (PDA). Many of them take Bluetooth[®] technology for granted. Few can imagine life before wireless (Wi-Fi) access to the Internet. They “speak” fluent net lingo, the acronym-laden language inspired by the instant messaging (IM) phenomenon. To the consternation of composition instructors, this tendency to communicate telegraphically has even begun appearing in drafts of essays.

Often, FYW students view Comp I as a WOMBAT. IMNSHO, many view the writing they do for the composition instructor, at least at first, as GIGO, resistant to understanding why a Physical Education Major or Pre-Med student is required to successfully complete two semesters of composition instruction.

Translation for the IM-impaired:

Often, First Year Writing students view Composition I as a waste of money, brains, and time. In my not so humble opinion, many view the writing they do for the composition instructor, at least at first, as garbage in, garbage out, resistant to understanding why a Physical Education Major or Pre-Med student is required to successfully complete two semesters of composition instruction (http://www.webopedia.com/quick_ref/textmessageabbreviations.asp).

The technologies we embrace and almost take for granted are adolescent when one considers that our personal experiences with computer hardware or software upgrades imply that keeping up with the pace at which technology changes may be daunting, if not impossible. Last year’s models are less expensive than the latest technology, making technological gadgets and machines more accessible to the general population. This increased affordability translates into the likelihood that almost every student entering college this year has at least a working

knowledge of basic computer applications, especially the Internet, and probably owns at least one techno-gadget.

In 2003, 61.8% or 70 million households in the United States reported owning a computer with 54.7% connected to the Internet (Day et al. 1). An Internet search reveals a growing number of computer learning devices like LeapFrog[®], offering applications suitable for all ages beginning at birth (www.leapfrog.com). A 2005 report from the United States Census Bureau reported 92.3 percent of children in grades K-12 using computers at school. In many school districts Pre-School and Primary School students routinely learn basic reading and composition skills using keyboards and digital monitors. However, these statistics merely point to the accessibility of available technology on a general level and, although they indicate widespread exposure to computers in an academic setting, they are not an achievement indicator regarding the level of technological and/or applications expertise these users may require for success in the college classroom.

Considering available technology, it may not be a farfetched notion to assume that copybooks and recitation, traditional pedagogical strategies for success, are quickly becoming foreign concepts to a growing majority of schoolchildren, children who are the next generation college students. More familiar to them are the technologies of video games complete with sophisticated, interactive and virtual graphics, digital cameras or recorders, and CD/DVD burners. Widespread use of sophisticated technologies implies the need for considerations of new and/or modified perspectives on developing visual literacies. Clearly, we must understand how technological advancements influence our acquisition of knowledge as related to how we read, process, and apply information, all of which informs composition pedagogy.

Hypertext and the Technology of Reading

The term *hypertext* was “coined by Theodor H. Nelson in the 1960s” in reference to what was then a radically new form of technology (Landow 2). While hypertext is no longer considered radical or new, the influence of hypertext, especially as it pertains to reading and writing, is an important consideration for teachers of rhetoric and composition. In Nostalgic Angels: Rearticulating Hypertext Writing, Johndan Johnson-Eilola defines hypertext as “a computer-supported technology for writing and reading” (3). Quite simply, words on a computer screen are hypertext; however, to most of us hypertext is a phrase or word we see on the computer screen that stands out from the rest of the text because it is a different color, usually blue, and often underlined.

Applying the latter definition, hypertext is a tool that offers the online reader access to additional information by left-clicking one’s mouse on a hyperlink. Once the reader makes the decision to investigate information via the hyperlink, he or she potentially encounters a myriad of additional options for further investigation, all by the click of a mouse. Those choices inform current debates regarding the roles and actions of readers and writers.

In “Hypertext: An Introduction,” Landow explains, “. . . critical theory promises to theorize hypertext and hypertext promises to embody and thereby test aspects of theory, particularly those concerning textuality, narrative, and the roles or functions of reader and writer” (2). Fueling the debates regarding the functions of reader and writer and influencing the choices made by reader and writer is the fact that hypertext is inherently “multisequentially read.” For example, what we refer to as “conventional text,” blocks of text on pages in a book or journal, is often indexed and footnoted. When the reader encounters these reference indicators,

he or she decides whether to leave the main text, read the additional information, which may reference more information, and return to the main text.

Hypertext brings all these elements together, making the connections and relationships easy to follow. Accessing references and explanations via hyperlinked footnotes and bibliographies is more easily accomplished online, even more so today, considering today's split screen and tabbed browsing environments; however, Landow warns that the interactive nature of hypertext reading calls for an "active reader," one who makes the best possible choices to achieve his or her goal (4-6). Hypertext potentially offers a more comprehensive network of texts that are in some manner related to the initial text the reader accessed than would be available in a more conventional medium (3-4). How, when, and why the reader responds to these choices influences their acquisition of knowledge and are important considerations for the development and assessment of literacy skills in a technological learning environment.

Modern hypertext applications are, by their very nature, rhetorically rich venues. Metaphors and hyperbole abound as we search for terms or click on pictures to access additional information. A search of the online encyclopedia Wikipedia[®] for "Illegal Aliens" may result in an article about a film instead of an article regarding a pressing immigration question. Instead of a photograph, a glittering, animated graphic represents one's identity on social networking sites like FaceBook[®] and MySpace[®]. Entering key words regarding a topic or interest (or a composition assignment) on Internet search engines like Yahoo[™] or Google[™] often yields more results than we want to take the time to read. This is a glimpse into digital culture, the online world of the IM generation, where students are fostered socially and academically in an environment of increasingly fast information processing and an over-abundance of visual stimuli.

Books, journals, and articles are widely available via the Internet and for scholars this represents a convenient and efficient mode of inquiry. However, in their 1998 study of 100 university students, David and Christine Hailey reported that hypermedia seemed to confuse the average learners in the group, all of whom were proficient computer users (342). Since the Hailey's study, widespread use of technology has become the norm. Might we assume that today's first-year composition students, armed with even more sophisticated technology, are familiar with hypertext navigation and are ready to embrace this technology as a mode of inquiry? It may be more risky to assume that these students, most of whom can send a text message faster than their instructor can ask them to put their cell phones away, understand its usefulness or, more importantly that they have achieved a level of literacy in a hypertext environment that encourages their use of the Information Highway for scholarly endeavors.

How We Read and Write

In "The Effect of Hypertext on Processes of Reading and Writing," Davida Charney embraces electronic reading as a new literacy form that is contrary to the cognitive reading models we currently understand. Supporting Charney's notion are scholars like James Sosnoski who, in "Hyper-readers and their Reading Engines," claims that hyper-reading lends itself to a "less linear sequencing of passages read," reminiscent of Landow's explanation of multisequential reading (163). Pamela Takayoshi expands upon those notions explaining that hypertext reading and writing "models the nonlinear ways experienced writers read and write" (251), concepts Landow outlines in a reading comparison of one of his own texts in a printed version versus the same text read hypertextually (5).

Consequently, these examinations of how readers read leads to discussions and opposing positions regarding hypertext reading and writing, especially relating to who is in control of the

text, reader or writer? Based on Jay David Bolter's study of hypertext and the history of writing, Pamela Takayoshi claims, "Hypertext complicates and potentially blurs [the] division between writing and reading" held by reader-response theorists and social constructionists. She cites Bolter's claims that as computer technologies replace printed books and readers accommodate "to features of a new medium," what results is a restructuring of writing via the "changing relationships between author and text, reader and text, and author, reader, and text . . . a reconfiguration and reconsideration" of the traditional relationship between the author and the printed text (251).

The blurring of relationships between reader and writer may be invisible to an inexperienced reader/writer, but Takayoshi claims that the experience a composition student gains navigating hypertextually will model the processes of more experienced writers and readers, fostering emulation of more mature composition skills (251). This is a clear possibility; however, the inexperienced reader/writer trying to link their thoughts hypertextually – via hypertext documents may suffer an increased likelihood he or she relocates their thoughts based on the next available link and fails to retain a connection to the primary text. These discussions warrant further research to determine the effects of hypertextual reading and the potential for interruption of comprehension.

Sosnoski offers a deconstructed definition of hypertext in an effort to reveal its effect on the reading process. He describes "hyper-reading" as a "constructive" activity "characterized by" eight traits: filtering, skimming, pecking, imposing, filming, trespassing, de-authorizing, and fragmenting (163). Skimming, filtering, and pecking lend themselves to a "less linear sequencing of passages read" according to Sosnoski (163). Perhaps these reading traits may feel comfortable to those within what we colloquially call the "instant" generation who are often

accused of wanting everything “right now.” Sosnoski suggests, “Hyper-texts were designed for skimmers” (167). Shortcut techniques are not unique to online reading; just ask any high school literature teacher how many copies of Cliffs Notes (which are also available online in hypertext) he or she has confiscated. Whether due to what Sosnoski calls the “. . . but I saw the film” syndrome (169), procrastination, or schedule overload, most theorists admit that the tendency to either avoid or selectively read a primary text is more easily accommodated in the hypertext environment.

Sosnoski’s description of hyper-reading as a venue that lends itself to a “less linear” read seems more relative to poor reading habits in general than to the text’s electronic positioning. His perspective contradicts Takayoshi’s claims. Both seem to agree that the reader takes control of his or her encounter with the text. Still, the potential for disruption seems to increase as one navigates from text to link, often diving deeper and deeper into what can become an internet abyss.

This notion is reiterated by Charney’s discussion of “time-tested cognitive and rhetorical theories” that positions multisequential hypertextual reading as contrary to the cognitive models we understand. However, contrary may not necessarily imply a less successful read. Again, considering the availability of technology and the technological proficiency expected in this generation of university students, hypertext reading is something that should not seem foreign to modern students, many of whom learned to read on a home or school computer instead of the traditional printed media.

The concept of reading “non-traditionally” is more discomfoting to those of us Marc Prensky calls “Digital Immigrants,” that is, those of us who developed a relationship with technology during the years that technological advancements became affordable and available to

the public as opposed to today's first-year university students who are "Digital Natives," those who have known technology since birth (1-2). "The computer is simply the latest step in a long line of writing technologies" (Baron 72). While it may seem that we live in a world of more and more text with less and less meaning (Sosnoski 164), compromising traditional rhetorical values in response is not an appropriate response to what seems like information overload or TMI – too much information. Instead, we need to develop ways in which to help students become better assessors of their own writing as well as that of others (Takayoshi 254).

A Technological Call To Action

These discussions of reading models and reader/writer control of text first inspired this research. In Literacy in American Lives, Deborah Brandt advises that we must understand and embrace an unprecedented literacy-learning climate in which we focus on the challenges faced by learners in our rapidly changing and demanding technological society (75). Compositionists need to respond to the changing needs of digitally sophisticated students with new and modified pedagogical perspectives; therefore, it is important to understand how technological advancements influence our acquisition of literacy as related to how we read and compose, and subsequently, inform composition pedagogy. We must consider a revised, modernized redefinition, not replacement, of traditional rhetorical considerations to help us convey to students comfortable with "instant" technological applications that one does not sit down at a keyboard and effortlessly research and then generate modern, complex, and seemingly seamless texts. In order to achieve this, we need to understand and embrace the technology that infiltrates almost every aspect of the modern student's life from the moment they are born. Furthermore, research is needed to more closely identify the expectations and assumptions we can draw regarding the technological expertise of first-year college writers.

One tool that has already proven invaluable in our efforts to assess, enhance, and utilize our students' technical literacy abilities to everyone's mutual benefit is the technology autobiography. A next step in the evolution of the literacy autobiography, a tool that teachers of writing have used for years, the technology autobiography offers insight into students' attitudes regarding technology and their literacy practices, especially as they relate to technology (Kitalong et al. 165). It offers a potential glimpse into the intimate relationship the "traditional" first-year college student, whose average age is 18, enjoys with a variety of technologies.

The technologies these individuals have grown up with include sophisticated video games far-removed from those the "early adopters (now in their thirties)" began designing and playing at least twenty years ago. "Video games, to them, are like electricity – always there when needed (especially these days, thanks to ubiquitous WiFi and cell phones)" (Levine 38). Considering the descriptions of modern students as technologically savvy, we need to determine if we are making assumptions about their literacy acquisition based on the supposition that gamers inherently become better readers, better researchers, or better students. A first-year writing student may have acquired a sophisticated level of visual literacy and expertise in massively multiplayer online (MMO) gaming; however, are they able to translate those experiences and skills into the ability to successfully navigate hypertext documents? Does that ability to navigate necessarily mean they know what to do with the available information or even consider its potential? These students, fresh from their high school experiences that still include traditional textbooks, may discover that the demands placed on them when asked to use hypertext technology as a research tool change the way he or she reads and reacts to texts.

The achievement of technological literacy as it relates to the potential for success for the first-year writer requires demonstration of an accomplished use of the Information Highway for

scholarly endeavors. Research is needed to begin making informed assumptions regarding first-year students' hypertext skills, including comprehension and information dissemination.

The Research Project

The site of this study was the University of Central Florida (UCF), a large, public research university located in Orlando. The project design complemented a second semester first-year composition course focusing on argument and research. By the end of the semester, students produced a documented, researched argument on a current issue. Three sections of one instructor's classes were the research participants. Seventy-five young men and women participated during their regular class time in a computer lab.

The project consisted of a technology autobiography, an online hypertext reading exercise, and a post-reading questionnaire. Data from each activity was recorded using a program written for this project and included all responses as well as each participant's navigational activities while engaged in the reading exercise.

Research Methodology

The role of hypertext as an interactive element on every web site is foundational to any discussion of technology and composition pedagogy, especially considering that one merely has to open their Internet browser or download and open an electronic document to encounter hypertext. As such and considering the potential for future applications that will most assuredly include hypertext, this research project investigates hypertext and its potential as an influence on second semester first-year composition students in their roles as researchers and seeks to identify ways in which we can incorporate hypertext reading and writing skills into our classrooms.

Scholarship investigation reveals that text has always been, at least to some degree, hypertextual since recursive writing strategies, by definition, encourage us to read, write, edit,

and then do it all over again. However, a cognitive processes study reveals that reading order, almost impossible to control in the hypertext environment, and the amount of information read have effects on comprehension (Salmerón et al. 175-177).

Reading and writing hypertextually requires cognitive strategies for success, especially considering its multisequential nature. It is important to consider the potential choices and distractions available to our students when presented with a hypertext document; therefore, this study fulfills a need for research that investigates students' assimilation of information presented hypertextually and will specifically respond to the following questions:

1. What reading strategies does the student utilize? For example, does he or she read the text through with few to no diversions resulting from an available hyperlink? Does he or she frequently navigate from link to link or from primary text to link and back?
2. In what ways does the hyper-reading experience reflect students' use of hyperlinked sources in the construction of his or her argument?
3. Does a comparison of the data compiled from students' responses reveal or suggest gendered or other influences on the hyper-reading experience?
4. How do we use these discoveries to inform pedagogy?

To respond to these research questions, this thesis reports the results of inquiry into hypertext reading, use of technology by first-year students, and theory regarding the acquisition of critical computer literacy. The goal is to synthesize and report research results and data regarding use of technology, specifically hypertext reading by second semester first-year composition students, to inform future studies and offer pedagogical recommendations.

Chapter Two presents a review of the literature that provides the background for this thesis and the accompanying research project. The review begins with an investigation into the history of hypertext after which a discussion of the technological influences on this generation of college

students offers insight into the assumptions we make about our first-year students and their technical proficiencies. Following this is an inquiry into literacy theories and the technology of literacy. Further scholarship reviewed includes prior hypertext reading research studies followed by an examination of ways in which English and composition instructors are integrating the use of technology into pedagogy. The final section reviews why considerations of hypertext reading and technology are important to the profession and includes an examination of the treatment of technology, specifically hypertext in argument textbooks and writer's handbooks currently used in first-year composition programs that focus on argument and research. The literature reviewed in this chapter informs and justifies the subsequent research project outlined in the next chapter.

Chapter Three is a detailed description of the research project from inception to completion. This chapter discusses project design considerations, project execution, and data collection techniques. Data are reported and project challenges or problems reviewed. Appendices include the Project Assignment, Technology Autobiography, and Post-Reading Questionnaire.

Chapter Four reports the data analyses. This discussion responds to the research questions regarding reading strategies, use of hyperlinked sources in the construction of an argument, and the influences upon the students' reading experiences that the data suggests.

Chapter Five discusses the challenge that when faced with a real-world assignment using technology as a research tool, how well prepared for the task is the first-year writer and how well have we adapted our pedagogies to include modeling appropriate and useful applications of technology designed to help students develop technological literacy skills and achieve their academic goals? In response to the final research question, this section employs the synthesis of

the data analyses and research to inform pedagogical recommendations and a discussion of potential research opportunities.

CHAPTER TWO: LITERATURE REVIEW

This literature review supports a research project that investigates students' assimilation of information presented hypertextually. The idea behind this project began with a pedagogical discussion between several instructors following library instructional sessions with first-semester composition students. Shared experiences included students' impatience with applications that required more than one or two mouse clicks to navigate through and a perception that many of the students did not fully understand the logic and scholarly potential that hyperlinked information offered. What followed were discussions regarding the challenges to teachers to identify and embrace the increasingly sophisticated technological influences on students who were entering college for the first time by adopting pedagogies that utilize the full potential of technical applications as research and composition tools.

This review begins with a definition and brief history of hypertext. Following that are insights into some of the general perceptions, expectations, and assumptions instructors make regarding first-year college students and what is happening now that makes it necessary to address the issue of how they acquire critical technological literacy. Next is a discussion of traditional reading models and current model reassessments resulting from the influences of technology.

The next two sections examine prior hypertext reading and comprehension research, followed by examples of what teachers of rhetoric and composition are doing to inculcate available technologies into pedagogy, both individually and in the profession as a whole. This review culminates with an overview of the research project this investigation supports.

Hypertext

I coined the term 'hypertext' over twenty years ago, and in the ensuing decades have given many speeches and written numerous articles preaching the hypertext revolution: telling people hypertext would be the wave of the future, the next stage of civilization, the next stage of literature and a clarifying force in education and the technical fields, as well as art and culture. T. H. Nelson, 1981

The concept of hypertext traces its origin to Vannevar Bush's essay "As We May Think" in 1945. However, Theodor H. Nelson is credited with coining the term "hypertext" in the 1960s to describe a (then) relatively new electronic text (Landow 3). Today, the term "hypertext" describes something more complex than a brightly colored word or phrase on a web site or electronic document. Whether the definition implies readability or describes the medium, a critical component of any definition of hypertext always includes its relationship with technology as seen in Nostalgic Angels: Rearticulating Hypertext Writing in which Johnson-Eilola generically defines hypertext as "a computer-supported technology for writing and reading" (3).

In "As We Do Write: Hyper-terms for Hypertext," Jim Whitehead examines hypertext, tracing its history and evolution, and charts the variety of terms used to describe the "intellectual works (the things being linked together) within hypertext systems" (8). Whitehead explains the diverse relationships that the generic term "hypertext" may potentially represent, like addresses, associations, structural elements, and rhetorical representations (10). The technical diagram Whitehead describes offers insight into the complexity of hypertext and its potential to influence the ways we read and comprehend.

In 1991, John Slatin defined hypertext as the “first verbal medium, after programming languages to emerge from the computer revolution” (870). Also in 1991, George Landow defined hypertext as “the use of the computer to transcend the linear, bounded and fixed qualities of the traditional written text,” revised in “Hypertext: An Introduction,” as a “multisequentially read” online text (3). This definition implies non-linear reading processes utilized in a hypertext environment that are in opposition to the traditional cognitive reading models we apply to printed texts. More simply, one reads traditional printed material in a linear fashion, top to bottom and left to right (in Western culture), while hypertexts present many opportunities for the reader to move in different directions. These movements are possible via the hyperlink, the word or phrase that, when selected, causes the reader to be redirected to another location. This location may be inside the same document, in a different document on the same web page, or to an entirely different source location; the options are seemingly endless.

Definitions and descriptions of hypertext often refer in some manner to its influence on reading and reveal an inherent trait of hypertext, non-conformity to the print-based reading models relied upon prior to the widespread availability of the Internet. In “Hypermedia, Multimedia, and Reader Cognition: An Empirical Study,” David E. Hailey Jr. and Christine Hailey define hypermedia and hypertext as reader-driven, parallel or hyper-based structures in which the author cannot predict the reader’s path (331). This description concurs with Johndan Johnson-Eilola’s description of hypertext as a text that “denies unified subjectivity and pure authorial intention by giving control to the reader” (89). The issue of reader control proves relevant to this research project when assessing the importance of students’ navigational choices when reading a hypertext document.

Cyber Students – Our First Year Writers

Students attending college for the first time are, today, likely to tell you that they rely almost exclusively upon e-mail, the Internet, and wireless devices for all their communications needs. They are proficient users of the latest, greatest technology that includes computers with wireless Internet connectivity, digital imaging and storage devices, and mobile telephones that perform email, text messaging, file transfers, and even act as walkie-talkies. Just as likely, they are fluent in a new “language” that evolved from the need to communicate as concisely and quickly as possible via this host of electronic gadgetry (www.webopedia.com). This generation of students has grown up with technology. They are, according to Marc Prensky, “digital natives” (1). Prensky reports in his 2001 article that the average college graduate has spent over 10,000 hours playing video games, 20,000 hours watching television, and less than 5,000 reading. Considering that affordable computer instruction and learning applications are available for children beginning at birth (www.leapfrog.com), technology is the norm for these students.

Technological advancements in the last half of the twentieth century cleared the way for more than half the homes in the United States to own at least one computer. In a 2005 report, the United States Census Bureau reported that 70 million American households, or 62 percent, had at least one computer. 56.7 percent of these households had children between the ages of 15 and 24 years old; 47.1 percent of those reported having Internet access. Overall, the percentage of children using computers in the home increased from 75 percent in 1993 to 86 percent in 2003. It is clear that students entering college today have obtained some level of proficiency working or playing on computers and have developed specific technological proficiencies (1-4). Currently, it seems reasonable to expect that these students are familiar with hypertext applications. It will prove important to distinguish between being familiar with the concept of

hypertext and a working understanding of hypertext as a tool for learning, specifically as it applies to the first-year composition classroom.

In “ECAR Study of Students and Information Technology, 2005: Convenience, Connection, Control, and Learning,” Robert B. Kvavik and Judith B. Caruso report on a study group composed of undergraduate students from 63 colleges and universities. Their findings complement statistics reported by the U.S. Census Bureau and expand on those findings. They report that the overwhelming majority of freshmen reported owning either a PC or a laptop, accessing the Internet at school, and that they simultaneously used technology for writing, email, “surfing the net,” and class activities. Almost every student reported themselves “highly skilled” in the use of word processors, yet they preferred a “moderate” amount of technology in the classroom (6). However, Kvavik and Caruso remind us that while the freshmen students represented in this study are “*digital freshmen*,” they remain “even more, freshmen” (8). This implies that despite the availability of technology, the average freshman is still an 18 or 19-year-old young man or woman, arriving at a college or university with many of the same influences preceding generations had as well as a new one – elaborate, affordable technology.

To explore some of the potential freshman attitudes and the writing mindset, Nancy Sommers and Laura Saltz offer “The Novice as Expert: Writing the Freshman Year.” In this essay, they develop the concept of the freshman student as a novice that offers the students the freedom to take ownership of their ideas as they learn how to communicate in academic prose. They report that students embraced the concept of critical thinking, realizing rewards that reportedly exceeded the anticipated goals of better writing skills and developing a more cohesive essay. According to Sommers and Saltz, students displayed an enthusiasm resulting, in part, from the realization that their thoughts, worries, and plans had value to someone other than

themselves and developed a sense of academic belonging to an environment in which they were treated like “apprentice scholars,” rather than just a warm body in a core-requirement classroom, the “academic tourist” (130).

In “Rediscovering the Kernels of Truth in the Urban Legends of the Freshman Composition Classroom,” Thomas Lovoy offers a glimpse into the perceptions and misconceptions about composition that his first-year writing students bring with them from high school. He offers some of what he calls “legends,” like avoiding second person usage, and other often partially assimilated data regarding style and format. Lovoy’s advice is to consider that these students’ experience includes an inventory of “stock rules” like use of “you,” listing three main points in a thesis, and avoiding first person. In following with the overall theme of this essay, Lovoy reminds us that the average freshman will exhibit a lack of experience considering the “broader picture” (11).

These seemingly clichéd reminders are often true of the average first-year student but may perhaps be less true of students who have successfully completed advanced composition and language courses in high school. In either event, our expectations of those for whom we plan to inform our pedagogies; therefore, insights into attitudes, personal and academic experiences, and cultural influences are important considerations. In addition, this list must include the array of technological proficiencies students bring to the table. Widespread availability of sophisticated technology and computer applications means that scholars on all levels access information with frequency and ease via the Internet using resources like libraries, forums, and online journals while online classrooms enjoy increasing popularity. National census reports and the ECAR study reveal that online access to information is the preferred method for young people today.

The potential academic connectivity that hypertext provides coupled with the need for first-year writers that are informed and prepared to embrace this technology as a tool to achieve their academic goals fuels concerns across the discipline for effective hypertext applications within composition pedagogy. Overshadowing the need to keep up with technology is the reality that just because the first-year writing student can send a text message faster than the instructor can ask them to put their cell phones away does not mean that they are familiar with hypertext navigation and are ready to embrace this technology as a research tool. It may be risky to assume that these students understand its usefulness or, more importantly, by the time they arrive in the academy they have achieved a level of literacy in a hypertext environment that encourages their use of the Information Highway for scholarly endeavors.

Techno-Literacy

Scholarship regarding historical beliefs surrounding how readers read as well as what challenges reading and technology present to literacy theories is the focus of this section. Books, the vehicles through which we acquired literacy for hundreds of years, are no longer the primary technologies of literacy. To modern students, “technology” implies the laptop slung over their shoulders or the touch pad convenience of their iPhones™, not necessarily the textbook they purchased from the university’s bookstore. The technologies of literacy have changed so comprehensively that technology and literacy are no longer uniquely separate from one another. We are reminded by Donald Leu, “The technologies of literacy involve each of us; we must change our focus as rapidly as the technologies of literacy themselves change.” Clearly, we are well into what Walter Ong declared to be “the age of ‘secondary orality’.” This statement, profound in its day, remains an accurate description of a culture that has evolved from its primarily oral beginnings to one in which “the sequential processing and spatializing of the

word, initiated by writing and raised to a new order of intensity by print, is further intensified by the computer. . .” (133). Contributing to that intensity is hypertext.

According to John Slatin’s “Reading Hypertext: Order and Coherence in a New Medium,” hypertext is the “first verbal medium, after programming languages, to emerge from the computer revolution” (870). He argues that hypertext requires a metatextual cognitive reading strategy, meaning contextual and inferential, and that the nature of hypertext lends to the production of three types of readers: “browsers” who wander aimlessly through the text, “users” who have a clearly understood purpose, and “co-authors” who use engage the contents. Slatin states that our perception of text as a permanent thing means that we read from a clearly defined beginning to an end; therefore, order is important to the many readers who head straight to the conclusion to get to the gist of the material (872). Slatin contends that readers begin at a point of their choosing in the hypertext environment. This seems to imply an inherent danger that readers overlook or avoid much of the text, placing more importance on the writer, web page designer, or instructor to promote reading practices designed to ensure that readers get as much from a hypertext experience as possible.

In “The Effect of Hypertext on Processes of Reading and Writing,” Davida Charney argues that hypertexts inhibit comprehension because “hypertext violates standard assumptions of what texts are like” (93). In other words, the way hypertext reading works is contrary to the cognitive models we understand. Charney does not believe that readers inherently know which information is important (95). In the hypertext environment, readers must chose their path, information may not be accessed at the “right” time, the potential for disruption is great, and there is a chance that the reader may lose or not develop a sense of “integrity” for the text because of the navigation activities (94). While Charney admits that this sounds like a “worst-

case” scenario, the potential for just such an exercise today seems likely considering the various designs of hypertext documents that often include animated graphics, video, and sound. Charney warns that designers assume that readers know what path to follow in pursuit of information and that “[readers] can tell when they have read enough or judge whether what they are reading is important,” which, she claims, is not often the case (95). Charney emphasizes our reliance on “systematic patterns of information” as well as our dependence on predictability and on the processes on which we rely to encode data into long-term memory, “a process that requires sustained or repeated conscious attention” (101).

Jay David Bolter offers similar concerns in “Hypertext and the Remediation of Print.” Bolter reminds us that writers begin with a lot of ideas and “only a vague sense of how these ideas fit together.” The same is especially true of a first-year writer when tasked with producing a researched argument essay. If unprepared for hypertext research, then Bolter’s illustration of being overwhelmed from without rather than from within, applies. According to Bolter, it is “not that there is too much in our minds to get down on paper, but rather that there is too much information held in electronic media for our minds to assimilate” (Bolter 33).

James Sosnoski reiterates these concerns regarding systematic reading patterns. In “Hyper-readers and their Reading Engines,” Sosnoski claims that hyper-reading lends itself to a “less linear sequencing of passages read” (163). Based upon his belief that moving forward educators cannot hold fast to the “conventions that governed the reading practices of previous generations,” Sosnoski argues that readers are often faced with making important decisions regarding vast amounts of available information when reading hypertextually. He assigns pitfalls to hypertext reading that include skimming and pecking, habits that result in less text actually being read.

Similarly, he warns that the hyper-reader may be more inclined to derive less from the text and more from their own intentions (163).

Pamela Takayoshi expands upon those notions in “The Shape of Electronic Writing: Evaluating and Assessing Computer-Assisted Writing Processes and Products.” Using an electronic writing classroom as a model, she describes the fine line between drafts of a composition when composed using word processing software, a stark difference to the mounds of hand-written pages students created 20 years ago. Takayoshi claims that for students learning reading and writing processes “hypertext models the nonlinear ways experienced writers read and write” (251). The nonlinear nature of hypertext exposes inexperienced writers to pathways they may not have thought to navigate prior to opening the electronic document.

Technology and composition are closely-related partners in education in American culture where, according to Cynthia Selfe and Richard Selfe in “The Intellectual Work of Computers and Composition Studies,” “literacy and technology are inextricably intertwined” (205). Today, networked classrooms, writing centers, and institutions are what students and teachers expect to encounter; they are no longer a mere possibility; hence, we are exploring the ways that people “acquire, develop, and practice technological literacies. . .” (207).

Hypertext Reading Research

This section reviews prior research projects regarding reading strategies and comprehension beginning with “Hypermedia, Multimedia, and Reader Cognition: An Empirical Study.” In this research, David E. Hailey Jr. and Christine Hailey report the results of a study using highly computer-proficient university students reading digital and non-digital texts. They report that “within the context of [their] study” most of the 100 participants had “measurably greater” difficulty learning in a hypermedia/hypertext environment than in “an identical

multimedia environment” (331). Included in the analysis were visuals and sound. Students reported both as preferable, but hindrances to efficient time management. The research concludes that those who seemed to struggle more with the electronic texts were the average students and suggest the learning differences between those students and the above average students requires further attention.

In a cognitive processes study, Ladislao Salmerón, José J. Cañas, Walter Kintsch, and Inmaculada Fajardo propose that readers’ strategies or navigational choices affect comprehension, a claim that implies the serious nature of hypertext as multisequentially read. Their subjects, forty-one University of Colorado undergraduates, read an expository text adapted to hypertext, and then responded to questions regarding the text (175-177). Their results reveal that reading order, almost impossible to control in the hypertext environment, and the amount of information read have effects on comprehension. Like the Hailey’s project, they found differences warranting further study between achieving and non-achieving students (187).

Additional research suggests the potential influence on comprehension hypertext has on readers with and without prior knowledge of a given subject area. In “Reading Strategies and Prior Knowledge in Learning from Hypertext,” Ladislao Salmerón, Walter Kintsch, and Jose Cañas conducted inquiries into strategies used by undergraduates for reading hypertext. In the two pilot studies, they asked participants to describe main criteria they followed moving through hypertext while trying to comprehend a text. Of the sixty-one undergraduate participants, 62% declared that they used no strategy. Those that identified strategies listed following the link most directly related to the one previously read as their first choice, followed by interest in the subject and ease, respectively (1158).

According to Salmerón, Kintsch, and Cañas, because low-knowledge readers cannot anticipate knowledge or “fill in the gaps,” they may benefit more from a “high-coherence text,” one that fosters navigation of links related directly to the one previously read. Furthermore, the researchers noted that navigational decisions based upon interest are potentially as varied as the number of readers; therefore, decisions based solely upon interest may hamper comprehension for low-knowledge readers because of coherence breaks in reading order. The top two strategies identified in the pilot experiments are important because, “reading strategies determine the order in which the text is read, and this could affect its comprehension” (1159).

These pilots led to an experiment in which seventy-one undergraduates read an expository text on atmospheric pollution adapted into a hypertext format. While most participants reported using more than one navigational strategy, 93% reported selecting the link at the top of the page followed by the most interesting link, and the semantically selected link (1162).

Finally, the researchers explored the nature of these reading strategies on comprehension in an experiment in which one hundred fifty-two undergraduates, in two groups participated. One group received instructions to select links that seemed more related to content of the text immediately preceding it; the other group was instructed to select the most interesting link (1164).

In their analysis, Salmerón, Kintsch, and Cañas report that hypertext is not particularly beneficial for low-knowledge readers because selection order impacts text coherence and breaks in text coherence hamper comprehension. Therefore, they conclude that “a critical issue for low-knowledge readers using hypertext as a way of learning is to identify what makes a reader select the order in a coherent manner” (1168).

Diana DeStefano and Jo-Anne LeFevre draw similar conclusions in “Cognitive Load in Hypertext Reading: A Review” in which they state that hypertext reading places demands on working memory and when that load is increased, reading performance is significantly impacted (1618). To investigate this, DeStefano and LeFevre performed research that involved reviewing 38 empirical studies on navigation and learning in hypertext reported from 1990-2004 concluding that insofar as comprehension and navigation is concerned, hypertext does not lead to an enriched experience with the text. This is because hypertexts that demand additional processing of the reader are likely to decrease comprehension. They report “considerable evidence that at least some features of hypertext can lead to poorer performance” when compared to reading standard text. However, they point out that the hypertexts designed and structured to facilitate information gathering proved beneficial for less knowledgeable readers since by design, the reader had less autonomy regarding navigational selections (1636).

The research project accompanying this thesis investigates the reactions to and reading strategies associated with a hypertext reading assignment for second semester first-year composition students. This population is no stranger to technology; however, they are less knowledgeable readers and inexperienced hypertext researchers. Based on the research detailed in this section, we know that when the less knowledgeable reader engages the hypertext, then “the distance between two related pieces of information increases, the relevant propositions read first will be deactivated, and it will be harder to link them once the related propositions are read” (Salmerón et al. 1159). Therefore, it is reasonable to anticipate that when given a hypertext research assignment, first-year students will reveal similar results.

Technology For The Classroom

Most calls to action share a common thread: embrace technology and modify pedagogies to embrace the constantly changing climate. In The Online Writing Classroom Susanmarie Harrington, Rebecca Rickly, and Michael Day point out that despite the progress in technology, access to that technology, and technological expertise, problems persist in academia. Among these are the acquisition of reliable and current technology, understanding how to utilize not only the machines but also the applications therein, and the interminable issue of funding for training, upkeep, and upgrades as necessary to keep up with the dynamic nature of technology (2). The applications discussed in this section are beginning to enjoy widespread use as an increasing number of instructors utilize class web pages and integrate electronic assignments.

An exercise gaining popularity with teachers of writing and one utilized in this research project is a technology autobiography. This is a modern adaptation of the literacy autobiography. The technology autobiography is a “wonderfully functional,” collaborative assignment that offers us insight into the “attitudes, experiences, learning strategies, and levels of expertise that students bring with them into our class” (Selfe 199). According to Karla Saari Kitalong, Dickie Selfe, and Michael Moore, use of technology autobiographies arose for a variety of reasons. Students arrive in the classroom with “sophisticated technological literacy skills and charged with excitement about technologies,” technologies that become more sophisticated every year (140). This assignment responds to the fast-paced evolution of techno-literacy and integrates the students into course designs.

Another popular assignment that continues to evolve with technology is the writing portfolio. Kathleen Blake Yancey examines the changing face of portfolios in “Electronic Appeal: Writing Portfolios Go Digital.” This article for The Council Chronicle, the newspaper

for the National Council of Teachers of English, previews two applications of digital portfolios and introduces the potential for widespread adaptation of technology for all our tried-and-true composition assignments and venues (<http://www.ncte.org/pubs/chron/news/115623.htm>). Among these are electronic bulletin boards, conferences, and computer-supported writing classes, venues discussed by Gail Hawisher and Cynthia Selfe in “The Rhetoric of Technology and the Electronic Writing Class” (57-63). The online class is already familiar to many instructors and preferred by many students. The advantages of an online writing class include more time spent writing, increased collaboration and peer teaching, more frequent quality sharing, and an increase in one-on-one conferences (59). Online writing classrooms, by their nature, should promote the development and use of hypertext compositions especially considering the potential use of linked references.

Hypertext is inherently conducive to the production of research essays. Michael J. Cripps discusses development and publication of hypertext essays in “Between Linear and Nonlinear: The Research Essay as Hypertext.” Modeling hypertext concepts throughout, Cripps begins this online essay with “All essays start somewhere. This one begins at the red dot..”

Availability and use of technology in teaching prompted a survey by the NCTE Conference on College Composition and Communication (CCCC). In "Integrating Multimodality Into Composition Curricula: Survey Methodology and Results From a CCCC Research Grant," Daniel Anderson, et al. reports that in 2005, there was no clear data available regarding who was teaching multimodal composing or how teachers were preparing themselves to design and assess these modern compositions (1). The survey’s intent was to reveal the ways and extent to which instructors are integrating technology into their writing pedagogies, what technologies they used,

and how faculty and administrators perceived the efforts to integrate multimodal composition into curricula (4).

The survey consisted of seven sections containing 141 questions. Eighty possible respondents from 31 colleges and universities received the surveys resulting in 45 responses. However, not every respondent answered every question. Although researchers hoped to target composition teachers, Anderson reports that 80% of the respondents were composition teachers, while 49% taught technical communications (5). All respondents reported that their technology skills were primarily self-taught or that they had received instruction or help from friends and family. A few attended professional workshops or received instruction from colleagues (11).

Sixty-two percent of respondents considered multimodal compositions to be texts that included audio, video, animation, words, and images. Fifteen percent of respondents reported that, “as a department they hadn’t agreed on a single definition that would support the pedagogical applications of multimodal composition” (8). One respondent reported a different rationale and approach [regarding multimodality] in their first-year writing class as opposed to what they applied to an elective. There was an indication of confusion among some respondents regarding which classes to consider multimodal. This led the researchers to question whether many classes have been using multimodality all along and we’re just beginning to “get it” in Composition” (17).

When asked whether they were satisfied with the treatment current textbooks offered multimodal composition, 42% responded they were not satisfied (13). Despite that, 93% reported that they had students analyze and compose multimodal texts. These included static images (graphics or photographs), advertisements, animated words or images, or blogs (13).

When asked to elaborate on what kinds of texts are assigned for production in these courses, thirty-three percent of the 41 respondents reported teaching four or more assignments involving hypertexts and reports/documentation each term. Of these 80% assigned hypertext essays, 83% assigned visual arguments, 34% assigned technology autobiographies, and 27% assigned audio documentaries. Many respondents included other assignments that included PowerPoint slide shows, brochures, professional portfolios, collages, and interactive Flash essays (13).

Despite the limitations of the CCCC survey, barely half of those contacted responded and the target audience was limited to those who responded to inquiries for participation, it is clear that attention to the integration of multimodal compositions in our classrooms is increasing. The literature reviewed in this section reveals that while we are often limited by administrative constraints like budgets or the inability of a large group of people to agree on a definition of multimodal, the potential for integrating technical applications into composition classrooms may only be limited by our imaginations.

Hypertext Reading: The Research Project

In considering the various applications and assignments available to composition instructors, there remains the concern of this research: how to facilitate the best use of information presented hypertextually by inexperienced researchers, in this case first-year composition students. A hypertext reading project was designed to assess how second semester first-year composition students performed when assigned a hypertext reading assignment from which they would inform and develop an argument. The project design consists of a technology autobiography, a hypertext reading assignment, and a post-reading survey. Student completed the project during regular class periods in a computer laboratory.

To gain insight into how technology use in research and composition is presented to students, an examination of the following argument textbooks and writer's guides was performed. All of the texts selected are widely used for composition programs focusing on research and argument. These texts feature companion websites that require hypertext navigational skills, and are all examples of hypertext applications that have been in place for several years and with which second semester first-year students should have a comfortable familiarity. The first textbook is from Bedford/St. Martins: Everything's an Argument by Andrea Lunsford, John Ruskiewicz, and Keith Walters. The second textbook is from Prentice Hall: Discovering Arguments: An Introduction to Critical Thinking and Writing with Readings, Second Edition, by Dean Memering and William Palmer. Two writer's guides that were examined are complements to the argument textbooks: Diana Hacker's A Writer's Reference, Sixth Edition and Quick Access, Fifth Edition by Lynn Quitman Troyka and Douglass Hesse.

The hypertext document selected for the reading and research exercise is from the online encyclopedia Wikipedia[®]. The article is "Illegal Immigration" (http://en.wikipedia.org/wiki/Illegal_immigration). Although encyclopedias are usually considered passive purveyors of information, I applied Landow's description of interactive hypertext found in "Hypertext, Hypermedia and Literary Studies: The State of the Art" to Wikipedia. Since Wikipedia promotes user editorializing, it seemed to fit the description as a text that "facilitates exploration and communication" with open-ended possibilities (21).

Research regarding the online encyclopedia Wikipedia resulted in two recent articles. "Know It All, Can Wikipedia Conquer Expertise?" provided background information on the creation and evolution of Wikipedia. By July 2006, Wikipedia was the 17th most popular site on the Internet, "generating more traffic than MSNBC.com" (36). The editorial nature of Wikipedia

may generate some criticism; however, research reveals strict usage and contributory guidelines in place designed to promote honesty and truthful disclosures of information. In “The Hive,” Wikipedia is hailed as having “the potential to be the greatest effort in collaborative knowledge gathering the world has ever known” (Poe 86). This tongue-in-cheek summary of the site’s history was available only online in hypertext, which simply seems appropriate to a discussion of hypertext reading and research.

Conclusion

This review reveals that access to technology is not a widespread problem in the United States today, although this review covers already-enrolled college students and does not thoroughly investigate marginalized or at-risk segments of the general population. “Schools are not the sole – and, often, not even the primary – gateways through which people gain access to and practice digital literacies” (Hawisher and Selfe 644). Through this review, we have witnessed that the profession understands the importance computer applications play as the next evolutionary step in composition programs despite the possibility that “an authoritative Web site is an oxymoron” (Bolter 165). While these studies reveal that most students consider themselves proficient users of technology and proficient word processors, these assessments are purely subjective and are not accurate predictors of success when applying specific uses of technological applications like hypertext reading as a research tool, the subject of this research.

In Writing Inventions: Identities, Technologies, Pedagogies, Scott Lloyd DeWitt claims that use of technology heightens students’ awareness of their learning processes (110). Research reveals that, as a profession, we are promoting and advancing the use of technology in the classrooms despite the ever-present threat of budget restrictions.

In “From Pencils to Pixels: The Stages of Literacy Technologies,” Dennis Baron reminds us that students and instructors are comfortable and often excited about the new and varied uses of technology in education. Baron predicted that people would become as comfortable using technology as an instrument for writing as each generation before adapted to the inventions of their day (83). Our adaptation to technology as computers became more affordable and their applications more diverse follows the “paradigm of the development of literacy” that Baron compared to the development of pencils. Today, few writers labor with a pen or pencil. The personal computer is the writing instrument of choice, likely the *only* instrument of choice for the majority of first-year university students.

At the time Charney conducted her early hypertext research, scholarly hypertext resources were unavailable on a large scale (102). Today, the availability of electronic resources for research has exponentially increased; nevertheless, the question remains that when faced with a real-world assignment using technology as a research tool, how well prepared for the task may we expect the first-year university student to be? More important, how well have we adapted our pedagogies to include modeling appropriate and useful applications of hyper-technology to help students achieve the critical technical literacy necessary to succeed? We must remember “for computer technologies to work with instruction, they must be well integrated into pedagogies that support their use” (Takayoshi 246).

Applying Walter Ong’s theory of secondary orality, writing for a global community means that we must replace considerations designed for the primarily oral culture embraced by early rhetoricians with considerations for an audience whose sheer numbers and diversity are almost impossible to define. What does this mean to the teacher of rhetoric and composition? It means a greater responsibility to model rhetoric as an enabler and adapt the canons of rhetoric to

applications in an intricately linked electronic, potentially global, instantaneous and highly technical communications environment. It means that we must identify strategies that model these appeals to the IM generation, modern students who may arrive in our classrooms thinking that a Google™ search can find anything and, worse yet, the gist of their research efforts is only a scroll or a click away.

This research will inform and inspire pedagogical recommendations. Already, one piece of advice from Sommers and Saltz stands out: “freshmen build authority not by writing *from* a position of expertise but by writing *into* expertise” (134). If we are able to recognize the contributions students can make to the academic conversation using their diverse technological proficiencies, we can use these discussions as avenues through which we help them navigate the virtual web of information available through the click of a mouse or touch of a pen.

CHAPTER THREE: PROJECT DESIGN AND IMPLEMENTATION

Background

Riding the crest of modern composition resources is the host of gadgetry, machines, and ideas that seem to define our actions throughout the day – technology. It is reasonable to expect that today’s first-year university students believe themselves technologically proficient. Not only have computers and computer-based technologies been present in their lives since birth, almost every student on campus carries a laptop, cell phone, MP3 player, or something else from the myriad of additional techno-gadgetry items that are affordable and available to almost everyone. Technology permeates everything we do from our classrooms to driving our automobiles. As a required point of entry into academia, modern composition programs have the opportunity and the responsibility to embrace technological advancements and the diverse influences they provide. In “Border Times: Writing and Being Written in Hypertext,” Johndan Johnson-Eilola offers an expanded definition of composition that includes “the writing and reading of online documentation” as well as “the electronic messages sent back and forth between participants in electronic discussions on bulletin boards, local area networks, and the Internet” (7). Clearly, the technologies of writing include sophisticated compositions designed and executed both for and within cyberspace. The blending of visual, audio, spoken, and unspoken texts creates hybrid compositions that rely heavily on an interactive component that links idea to idea and offers the reader countless pathways from which he or she must make important rhetorical decisions. That component is hypertext, the focus of this research.

Considering the prevalence of hypertext throughout the Internet and web-based applications and the extent to which first-year students use computers and technology, we might assume that they understand the function they perform when they click on the highlighted or

underlined text on a web page and move to another text. However, the specific skills honed navigating a gaming site and those necessary for a successful reading of a journal article may or may not be the same or even complementary. Reading or navigating a hypertext document as a research resource requires dexterity *and* cognition. As revealed in research conducted by David E. Hailey Jr. and Christine Hailey, less-experienced learners may not realize the full potential of a hypertext text without direction (342). This consideration leads to questions regarding whether or not first-year students really do understand the potential hypertext offers them as a vehicle through which they may succeed in some of their academic endeavors.

Taking into consideration the potential scope of exposure we assume first-year students have to hypertext, more questions arise regarding how to determine the breadth of that experience, including what influences, if any, hypertext has upon their reading and comprehension. The potential for interruption and distraction within a hypertext seems great for any reader, but especially for an inexperienced reader who may not recognize distractions for what they are and not fully appreciate how or to what extent distractions influence successful reading. The presence of a hyperlink is inherently a distraction. Aesthetically, the hyperlink stands out from other text on the page by virtue of its color, font size, or an underline. Moreover, its primary purpose is to woo the reader onto another pathway of information, what we know as a “node.” That deviation from a mostly uninterrupted linear reading path requires a conscious action on the part of the reader.

Prior research indicates that the decision-making process hypertext readers experience greatly influences their acquisition and development of critical computer literacy skills. Based upon the fact that “[r]eading strategies in hypertext can be considered as the decision rule that a reader follows to navigate through the different nodes of a hypertext,” research regarding reading

order and the amount of accessed information was conducted to show whether or not those selections affected comprehension (Salmerón et al. 174). This study conducted with undergraduate university students revealed differences in coherent reading strategies used by low-knowledge versus high-knowledge students. This is important because “reading order and the amount of information read have distinctive effects on the representation of the text that readers form when reading a hypertext” (187). Further investigation by three of the same researchers took those findings and applied them to identify readers’ strategies while negotiating hypertext. The researchers concluded low-knowledge readers, being unable to anticipate knowledge, would benefit from “high-coherence” text, one offering more direction by virtue of the relationship between a hyperlink and its predecessor (Salmerón et al. 1158). These studies reiterate earlier research conducted by David E. Hailey, Jr. and Christine Hailey that revealed average students, even those reported as technologically proficient, struggled more with electronic texts than more advanced students (2).

These projects engaged undergraduate student participants, but did not specifically target first-year university students and imply the potential for similar results when presenting first-year students with electronic texts. Realizing the need to collect data specific to this population, I decided to investigate first-year composition students’ assimilation of information presented hypertextually. While students today hail from an era in which it is likely that they acquire literacy skills on a computer more often than from printed text, the prevalence and increasing sophistication of electronic texts provides potentially disruptive distractions. It is important to consider the influences of and reactions to the potential choices and distractions available to our students when presented with a hypertext document; therefore, this study begins to fulfill that

need. The project includes a survey of the individual student's technological abilities as perceived by the student, an online hypertext reading assignment, and a follow-up questionnaire.

Method Design

The primary design consideration was to offer a hypertext reading experience in an online environment and gather data from each participant without interfering or influencing their actions. To that end, a programmer compiled the components of the project into a software application that was loaded onto a server and accessed from a computer lab. This design offered participants computer access to all components in which they would participate: General Instructions, Technology Autobiography, Reading Assignment, and Post-Reading Questionnaire. Important to the research and to the integrity of the hypertext reading experience, participants navigated to and read the hypertext article on its web page; the article was not downloaded and read offline. All aspects of the project required the same or similar online navigational decisions and actions found on any web site. The application tracked each student's online activities by recording time from logon to logoff as well as the result of each click of a mouse. The researcher considered the navigational records and students' responses to the two questionnaires as data components for analysis.

Participants

Seventy-six University of Central Florida first-year second semester composition students participated in this study for class credit. The students were from three sections of one instructor's composition classes. Each class session met for fifty minutes, during their regular class times in a computer lab on campus. Demographic and technology profiles of the students are presented in detail later in this chapter in the section titled "Participant Technology Profile."

Components and Implementation

Upon arrival, each research participant signed in for the instructor. Each participant received printed general instructions regarding logon procedures. These documents included screen prints of logon pages and instruction pages for each section of the project to be used as reference anytime during the project (Appendix A). The researcher reviewed the instructions orally and modeled the logon process.

After a brief question and answer session, students logged on and completed a Technology Autobiography (Appendix B). The technology autobiography is a component of this project designed to offer insight into students' perceptions of their computer proficiencies as well as any experience with computer applications. In addition to these responses, we may anticipate bonus information regarding the students' attitudes and learning strategies. Use of technology autobiographies as writing assignments, often in technical writing programs but also in English and composition courses, is gaining popularity. According to Karla Kitalong, Dickie Selfe, and Michael Moore, the technology autobiography "makes explicit the students' experiences with technologies and clarifies how they understand the new technologies that are moving so quickly into the 21st century classroom" (139).

The first section of the technology autobiography solicited demographic information about the participants. The next section was designed to reveal each research participant's exposure to computer technology and the level of expertise each research participant feels he or she has achieved in the use of specific computer applications. Participants identified activities for which they use a computer. Options provided were email, entertainment, gaming, news, research, shopping, job search, and social networking. Comment fields were available in which participants identified the social networking sites they preferred and listed other uses of

computers as well as explanations or comments. They identified locations in which they used or accessed computers including computer labs, home, school, library, and work. They were asked to rate their level of expertise with the following applications on a scale of 1-5 with 1 being the least: America Online[®], Hotmail[®], MSN Messenger[®], PowerPoint[®], Word[®], Works[®], WordPerfect[®], various Adobe[™] products including Acrobat Reader[®] and Professional[®], Photoshop[®], and various audio and video applications including media center and MP3 converters. This section of the form provided fields in which students could write-in additional resources or comments.

In the next section, participants rated on a scale of Never (N), Sometimes (S), or Always (A) their use of the Internet for academic research. Using the same scale, they rated how often they accessed electronic class reserves in a library and how often they utilized spell and grammar check options in word processing software. Participants were asked questions regarding ownership of specific technological items like personal computers, including laptops or notebooks, personal digital assistant devices, and iPods[®].

In a series of open-response questions, participants responded to inquiries regarding their access to computers and technology in their lifetime. Next, they were asked to list their preferred Internet search engines in order of preference. In the final section were questions specific to hypertext and this research. “What is electronic text?” “What is hypertext?” Following these, participants were asked to list examples of hypertext with which they were familiar and describe their hypertext reading experiences, including this one. The final question offered participants the opportunity to provide comments or further explanations.

Once the Technology Autobiography was completed, participants navigated to the Reading Assignment (Appendix C). The instructions advised participants to navigate to an article on

illegal immigration in the United States located at

http://en.wikipedia.org/wiki/Illegal_immigration and to use their reading to inform and develop a thesis for an argument.

After reading the assigned hypertext, participants navigated to and completed a Post-Reading Questionnaire consisting of thirteen questions (Appendix E). These questions were designed to offer insight into ways the hyper-reading experience reflected use of hyperlinked sources in the construction of their arguments as well as what specific information the participants gained from their reading. The response fields for each question allowed ample space for elaboration.

Students had to identify the topic, problem, or issue discussed in the article as well as how the article addressed his or her position on the subject. Questions included the following: “In what way(s) was the article helpful or not helpful in the formation of your argument or position?” “What actions did you take based on that?” “You are using the information from this article to argue a position. To whom is *your* argument addressed and why? “

Hypertext-specific questions included asking what actions or movements they made while reading. If they found the reading helpful in suggesting additional resources for information, they were asked to elaborate on any actions taken to investigate them. Further questions included whether the participants considered “this ‘node’ of information credible.” Related to that, they rated five hyperlinked sources in order of importance. These were identifying experts, identifying opposition, finding a subject, locating sources, and investigating points of view.

The final sections asked that they rate the article’s level of reading difficulty and elaborate on this reading experience. A question comparing this reading to an article in a book or

magazine followed. In closing, they were given the opportunity to elaborate on any difficulties not already addressed and to offer any additional comments or explanations.

Challenges

The highest hurdles faced during this research project involved logistics. Most of the communications regarding the programming occurred via email since the the primary researcher and the programmer reside in different states. Furthermore, despite the high levels of computer technology proficiency of all concerned, programming and implementation proved a time-consuming endeavor.

As in any research project involving seventy-six eighteen to twenty-five year-old undergraduate students, challenges were presented, most of which were easily addressed. Each session lasted fifty minutes, the length of a regular class period; therefore, considerations of time were important. To that end, efficient use of the limited available time was planned in order that participants were not rushed or made to feel that they did not have enough time to complete the tasks. Luckily, late arrivals, inattentiveness, and some apathy occurred in only a few instances.

One issue that caused some delay at the beginning of each session involved logging in. Because the software application was loaded onto the university's server, students logged in using their personal identification (PID) and password issued to each individual at enrollment. At least one student in each session could not remember his or her PID and/or password. This resulted in a delay while they contacted the Information Systems Help Desk Analyst. After the first occurrence of this in the 7:30 session, students in the two subsequent sessions were greeted with "Good Morning. If you do not know your PID and password, please return to the first floor Help Desk for assistance."

Technical issues arose for a few participants. In one instance, a young woman complained that as soon as she entered her PID she was rerouted back to the logon screen. This occurred on two other machines but was resolved by rebooting two of the three computers. Two participants complained that their PID and passwords “don’t work.” One was due to a typographical error; however, the other student could not get her situation resolved even with the assistance of the Help Desk Analyst.

While some of these issues may have been anticipated, often an issue arises that one may not expect. In one instance, a young woman complained quite loudly that she was offended by the racial categories on the Technology Autobiography. She felt as though her race or ethnicity was not accurately represented and wondered why it was of concern to declare one in the first place. Naturally, this caused a disruption and inspired several conversations around the room, including verbal volleys between this participant and others in the class. Resolution was achieved by engaging the student in a conversation outside the computer lab to reassure her of the researcher’s intentions and her right to decline participation in any aspect of the project.

Another unexpected challenge occurred in the form of each group’s dynamics. The fifty-minute sessions, scheduled for the instructor’s regular class times, were 7:30, 9:30, and 11:30 a.m. Other than a few tardy students and one couple carrying on a conversation in the last row, the first group arrived rather quietly, remaining orderly throughout the period. The 9:30 group was noisier, finished in less time than the first group, and hustled from the room at the end of the session. The 11:30 group exhibited an escalated noise level, suffered many late arrivals, and several disruptions. They seemed to require more time to settle down than the earlier sessions, and, when presented with the details of the assignment, many in the group voiced disinterest and exhibited impatience during the exercises.

Data Collection

In addition to web page programming that made the components available to the participants, the software was coded to record each participant's responses to the questions, the time each person spent from logon to logoff, and their navigational strategies. Specifically, with each click of the mouse the program recorded the destination and time spent at each node. These recorded movements offered one perspective on reading strategies the participants utilized. In other words, the recorded navigations should reveal whether or not the students considered the hyperlinked text as a staging point from which to pursue additional sources for reference.

Raw data was exported from the application in two formats. Responses from the technology autobiographies and the post-reading questionnaires were exported into spreadsheets. The recorded navigations and time records for each participant were exported as Hypertext Markup Language (HTML) documents, one for each participant.

Participant Technology Profile

Table 3.1 reports demographic data. The seventy-six students participating in this research all reported their ages between 18 and 25 with 91%, n=69 reporting their level in school as "freshman." One reported as a senior with three each reporting as sophomores and juniors. Nevertheless, all participants were enrolled in English 1102, Composition II.

There were forty women and thirty-six men. The majority of the participants reported their race/ethnicity as Caucasian or part Caucasian (68%, n=52). Eight students reported their race/ethnicity as a combination of two or more of the options listed on the survey with five participants reporting other ethnic groups as at least part of their race/ethnicity.

Table 3.1: Research Participants

Female	Male	Race/Ethnicity	Level in School	
3	7 ^g	Black/African American	Freshman	69
	3 ^g	Eastern Indian	Sophomore	3
29	23 ^{b c f}	Caucasian	Junior	3
	2 ^b	Asian	Senior	1
	2 ^{e f}	Chinese		
1 ^a	2 ^g	Spanish	Age	
6 ^a	6 ^{c d e g}	Hispanic	18-25 years old 100%, n=76	
	1 ^g	Latino		
1 ^a	1	Other:		
1		Asian/Thai		
1		Middle Eastern		
		Bahamian-American		
		Guyanese		
	1 ^d	Greek		

^a One woman reported Spanish/Hispanic/Middle Eastern

^b One male reported Eastern Indian/Caucasian

^c Two males reported Caucasian/Hispanic

^d One male reported Hispanic/Greek

^e One male reported Chinese/Hispanic

^f One male reported Caucasian/Chinese

^g One male reported Black/African-American/Eastern Indian/Spanish/Hispanic/Latino

In response to questions regarding computer usage, email was reported as the primary use for the majority of the respondents (Table 3.2, 99%, n=75), followed by entertainment (91%, n=69). Research follows at 78%, n=59 with only 4% of those reporting listing “school” as a use for the computer in the “other” category. Social networking and shopping follow research closely, with two more women than men reporting use of the computer to shop (n=23). Use of the computer to satisfy curiosity was reported by 59% of the respondents (n=45) with news (50%, n=38) and gaming (42%, n=32) following closely. Only 26% of respondents reported using the computer for job searches (n=20); however, the number of men and women were equal.

Table 3.2: Reported Uses of Computer

Use	Total	Female	Male
Email	99%, n=75	36	39
Entertainment	91%, n=69	34	35
Research	78%, n=59	30	29
Social Networking	67%, n=51	25	26
Shopping	61%, n=46	24	22
Curiosity	59%, n=45	25	20
News	50%, n=38	16	22
Gaming	42%, n=32	9	23
Job	26%, n=20	10	10
Other	5%, n=4		
School		2	1
Work in Digital Media Protocols			1

Students elaborated on their use of computers for social networking. The 51 respondents were equally divided between female and male students. Of those, 31% (n=16) selected Facebook® their first choice. Again, the split was even between female and male students. MySpace® ranked second with 24% (n=12) noting their preference for the networking site. A distant third was America Online Instant Messenger (AIM®) with only 8% (n=4) of the students listing it as a favorite.

Table 3.3: Social Networking Breakdown

Use	Total	Female	Male
Social Networking	51	18	18
AIM®	4	2	2
Chat	1	1	
Facebook®	16	8	8
Instant Messenger	1		1
LiveJournal®	1	1	
MSN®	1		1
MySpace®	12	5	7
Those who listed social networking uses for computers often listed more than one.			

Data revealed that participants logged in and out of the Technology Autobiography more than once (Table 3.4). Because several students attempted to begin before receiving instructions and two students reported hardware problems, some of these logon attempts were anticipated in

the data. There were four participants from the 7:30 session, one of whom attempted the exercise four times. During the 9:30 session, this number doubled to eight participants. That number rose to nine in the 11:30 session.

Table 3.4: Technology Autobiography Logon Attempts

Male	Logon Attempts	Session	Female	Logon Attempts
1	4	7:30	1	2
1	2		1	2
1	2	9:30	1	2
1	3		1	3
1	2		1	2
1	2		1	2
1	7	11:30	1	2
1	3		1	3
1	2		1	2
1	2		1	2
			1	6
10		Total	11	

Tables E and F report the levels of expertise the students rated themselves in each of the applications listed. Ratings were from one to five, with one being the least amount of expertise. Table 3.5 reports the total number of students rating each application; Table 3.6 breaks down those totals by gender. America Online (AOL) received the highest proficiency ratings of those listed on the survey with 50% (n=38) of the students rating themselves at a level 4 or 5 proficiency. Hotmail was next with 33% (n=25) rating themselves at a a level 4 or 5 proficiency. In desktop applications Word gained the highest ratings. No student rated their proficiency using Word at levels 1 or 2; instead, 95% (n=72) rated themselves at levels 4 and 5. WordPerfect received the next highest ratings with 47% (n=36) rating themselves 4 or 5 and 22% (n=17) rating themselves 3. Students rated themselves as highly proficient users of PowerPoint. Sixty-two percent (n=47) rated themselves 4 or 5 and 26% (n=20) rated themselves 3.

Table 3.5: Participants' Levels of Expertise

Rating 1 = lowest rating	1	2	3	4	5
Email Applications					
AOL®	13	16	9	19	19
HotMail®	18	17	16	10	15
MSN Messenger®	28	14	13	12	9
Desktop Applications					
Adobe Acrobat Reader®	8	16	34	12	6
¹ Adobe Acrobat Professional®	23	20	23	7	2
¹ Photoshop®	7	22	30	12	4
PowerPoint®	2	7	20	30	17
Word®	0	0	4	30	42
WordPerfect®	10	13	17	22	14
¹ Works®	8	13	21	21	12
Audio/Video Applications					
Adobe A/V	36	21	19	0	0
¹ Media Center	25	15	18	14	3
MP3 Converter	25	15	19	9	8

Table 3.6: Participants' Levels of Expertise By Gender

Rating 1 = lowest rating	1		2		3		4		5	
	F	M	F	M	F	M	F	M	F	M
Email Applications										
AOL®	6	7	8	8	2	7	12	7	12	7
HotMail®	9	9	10	7	8	8	6	4	7	8
MSN Messenger®	16	12	3	11	9	4	6	6	4	5
Desktop Applications										
Adobe Acrobat Reader®	2	6	10	6	20	14	5	7	3	3
¹ Adobe Acrobat Professional®	10	13	13	7	13	10	4	3	0	2
¹ Photoshop®	4	3	10	12	17	13	5	7	3	1
PowerPoint®	0	2	3	4	11	9	17	13	9	8
Word®	0	0	0	0	2	2	13	17	25	17
WordPerfect®	4	6	3	10	12	5	10	12	11	3
¹ Works®	5	3	6	7	12	9	10	11	7	5
Audio/Video Applications										
Adobe A/V	18	18	11	10	11	8	0	0	0	0
¹ Media Center	14	11	8	7	12	6	5	9	0	3
MP3 Converter	15	10	8	7	10	9	5	4	2	6

¹Total respondents = 75; otherwise all 76 participants responded to prompt.

Table 3.7 reports responses to three prompts in which students were asked to rate on a scale of Never, Sometimes, or Always their use of the Internet for academic research, including electronic class reserves, as well as their use of spell and grammar check options in word processing applications.

Prompt 1: Performed academic research using the Internet

All seventy-six students responded to this prompt. An almost equal number of female (n=27) and male students (n=28) or 72% (n=55) responded that they “always” performed academic research using the Internet. Only one student, a female, responded that she never used the Internet for research. Twenty students responded that they “sometimes” used the Internet for research. Of that number 60% were female (n=12) and 40% were male (n=8).

Prompt 2: Accessed electronic class reserves in the library

Seventy-four students responded to this prompt. The responses, evenly spread between female and male students were: 38% Never (n=28), 45% Sometimes (n=33), and 17% Always (n=13).

Prompt 3: Utilize spell and grammar check options in word processing software

All seventy-six students responded to this prompt. The responses were overwhelmingly positive with 88% (n=67) selecting “Always,” an almost even split between female and male respondents. No one selected “Never,” with 12% (n=9) selecting “Sometimes.”

Table 3.7: Usage Responses

Prompt	Never		Sometimes		Always	
	F	M	F	M	F	M
Performed academic research using the Internet Total responses, n=76	1 n=1	0	12 n=20	8	27 n=55	28
Accessed electronic class reserves in the library Total responses, n=74	16 n=28	12	17 n=33	16	5 n=13	8
Utilize spell and grammar check options in word processing software Total responses, n=76	0 n=0	0	5 n=9	4	35 n=67	32

Table 3.8 reports the responses to questions regarding the student’s access to specific technological devices. Of the 76 responses, 70% (n=53) reported owning or using a PC or MAC. Similarly, 88% (n=67) of the 76 responses received indicated students owned or used a laptop or other portable computer. Only 8% (n=6) of the 73 respondents reported owning or using a PDA; however, of 76 responses received regarding ownership or usage of an iPod, 75% (n=57) reported yes. Ninety-two percent of the students responding reported having access to a computer the majority of their lifetimes.

Table 3.8: Access To Technology

Own/Use PC/MAC		Own/Use Laptop, PowerBook, Notebook		Own/Use a PDA or Palm		Own/Use iPod					
Total n=76 Yes 70%, n=53		Total n=76 Yes 88%, n=67		Total n=73 Yes 8%, n=6		Total n=76 Yes 75%, n=57					
Female	Male	Female	Male	Female	Male	Female	Male				
Yes	26	27	Yes	37	30	Yes	5	1	Yes	29	28
No	14	9	No	3	6	No	35	32	No	12	7
Had access to a computer majority of lifetime						If did not have access to computer majority of lifetime, how long?					
		Female		Male				Since Middle School			
Yes		38		32		Female		10 years			
No		3		4				Nine years			
Total n=76 Yes 92%, n=70						Male		Six years			
								Since I was 14			
								5 years			

Students were asked if they regularly utilize Internet search engines and to list those they use in order of preference. Table 3.9 reports those results. Of the 76 responses, 97% (n=74) stated they regularly use Internet search engines. Of the 73 responses to rate their preferred search engines, Google™ was listed as the first choice (84%, n=61) with Yahoo™ a distant second (10%, n=7). Those listing Google as their first choice almost always listed Yahoo as second. Likewise, those listing Yahoo as first almost always listed Google as second. Other search engines listed in the responses as second or third choices were: Ask Jeeves™, Webferret™, Wikipedia, About™, Dogpile™, AltaVista™, AOL, and Big Mama. Note: Ask and Ask Jeeves are the same search engine and Wikipedia is an online encyclopedia, not a search engine.

Table 3.9: Internet Search Preferences

Regularly utilize Internet search engines Total n=76 Yes 97%, n=74		
	Female	Male
Yes	37	37
No	1	1
List search engines in order of preference		
1 st choice, n=73		2 nd choice
Google™	84%, n=61	Yahoo™ n=17
Yahoo™	10%, n= 7	Google™ n= 7
Ask™	4%, n= 3	
MSN™	1%, n= 1	
Mozilla Firefox®	1%, n= 1	

Data collected from the Technology Autobiography for this research reconfirms prior reports that reveal modern students have widespread access to technology. In 2005, 96.1% of the seniors and freshmen in 63 surveyed institutions owned computers (Kvavik et al. 29). Students participating in this thesis research revealed that 70% of them owned or used personal computers and 88% owned or used laptops or other portable devices. The majority of participants admitted to regularly using Internet search engines (97%), 75% owned an iPod®, and 92% claimed to have had access to a computer the majority of their lifetime (Table 3.8).

The evidence that the 76 students gathered for this project had the experience, exposure, and expertise necessary to make a valuable contribution to the research effort outweighed the challenges. Clearly, this study group had all the earmarks of the Net Generation; however, it was important to determine how well they understood the most important element of this research project and something to which they clearly had prior exposure: hypertext. To that end, the results of their participation in a hypertext reading exercise were compiled in data tables for analysis. The analyses of these data are presented in Chapter 4.

CHAPTER FOUR: DATA ANALYSES

Reading Hypertext With The Net Generation

It is increasingly clear that literacy and technology are inextricably intertwined (at least within American culture) and that, as a result, individuals are no longer considered literate unless they know how to communicate in the officially sanctioned form of standard English and within electronic contexts.

Cynthia Selfe and Richard Selfe, 2002

Working with seventy-six first-year second semester composition students offered a glimpse into the technological proficiencies of individuals better known as the Net Generation. The data compiled from this research begins an investigation that assesses those students' critical computer literacy skills and suggests how we can more fully assimilate technology into our classrooms to engage technologically experienced students and promote the highest levels of critical technological literacy. Critical technological literacy includes concerns about the modern forces that influence our acquisition of literacy on all levels, and examines the potentials of our relationship with technology (Selfe 432).

To begin this assessment, the Technology Autobiography offered a measurement of each student's level of technological proficiency and a baseline from which comparisons could be later drawn. After completion of the Technology Autobiography, students navigated into the heart of the project, the hypertext reading assignment. The instructions informed the students to access and read the hypertext article listed on a specific web page which would provide the basis for development of an argument essay (Appendix C). Following their reading, the students completed a Post-Reading Questionnaire that included open-response questions (Appendix D). Responses were reviewed for key words or terms and for an indication that the student responded

to the question as asked. No attempt was made to “grade” for correctness; however, consistent application of key words and terms helped determine if the student indicated an understanding of the question as well as the hypertext article.

The Topic

The article, “Illegal Immigration,” was accessed on Wikipedia, via the Internet, at http://en.wikipedia.org/wiki/Illegal_immigration. Ninety-two percent (n=61) of the students’ responses indicated they knew the topic of the article assigned was illegal immigration. Of those, 51% (n=31) were female and 49% (n=30) were male. When asked to state their position on the subject as well as how well the article addressed or inspired their argument, 58% (n=38) of the 67 respondents were able to describe in what manner and how well the article addressed their position on the subject. Of that number, 53% (n=20) were female and 47% (n=18) were male. In a related question, 94% of the students stated to whom the argument they were assigned to develop was addressed (Table 4.1).

An assessment of the data revealed that the majority of the students read and understood these first three questions and were able to clearly communicate the topic of the article, their position on the topic, and to whom their argument would be addressed. The topic of the article seems a simple request since it is located not only at the top of the web page (once accessed), but also within the URL and the number of correct responses reflects the ease of the question. The second question required more thought and an engagement with the text; hence, the number of correct responses dropped to 58%, still over half. That engagement may have ultimately resulted in the spike of correct responses (94%) to the final prompt; however, this assumption is not based on hard data.

Table 4.1: Research Reading Topic

Prompt: What is the topic, problem, or issue discussed in the article you read?	
Total Responses, n=66 92%, n=61 Correct Response	51%, n=31 Female Correct Response 49%, n=30 Male Correct Response
Prompt: Regarding your position on this subject: What is your position on this subject? In what manner and how well does the article address your position on this subject or inspire your argument?	
Total Responses, n=67 58%, n=38 Correct/Complete Response	53%, n=20 Female Correct Response 47%, n=18 Male Correct Response
Prompt: You are using the information from this article to argue a position. To whom is your argument addressed and why?	
Of the 65 responses, 6% (n=4) did not respond to the question; otherwise, every student responded by stating to whom their argument was addressed and why.	

Understanding Hypertext

The Technology Autobiography revealed that students participating in this research clearly considered themselves technologically proficient. The majority of the students reported using computers primarily for email (99%), then entertainment (91%) and research (78%). Since 91% were freshmen, it was not surprising that few of them listed job searches as a primary use of their computers (Table 3.2). These results compare to the ECAR Research Study that revealed 99.7% of the freshmen polled used their computers for “creating, reading, sending e-mail” (36). Nevertheless, when students participating in this research were asked to rate their levels of proficiency in desktop applications, Microsoft Word[®] received the highest proficiency rating from both female and male students (Table 3.6). Similarly, 88% (n=67) rated their use of spell and grammar check options in word processing software as “always” (Table 3.7).

Inasmuch as a general determination of students’ technological proficiencies was an important consideration, it was information regarding their understanding and use of hypertext during reading that prompted the inclusion of specific open-response questions in the

Technology Autobiography for completion prior to beginning the reading section of the research assignment. These data are compared to responses from the Post-Reading Questionnaire to offer insight into students' reading strategies, specifically how or if there is an indication that hyperlinks affected reading patterns and indications of the use of hyperlinks as a resource in the construction of their arguments.

Student responses to four questions regarding electronic text and hypertext are reported in Table 4.2. Sixty-one students responded to the question, "What is electronic text?" Of the sixty-one respondents, 54% (n=33) responded in some manner that they did not know. Of those thirty-three, 61% (n=20) were female and 39% (n=13) were male. Forty-one percent (n=25) indicated their awareness of the connection between electronic text and technology, specifically the Internet, computers, and other technological devices.

Next, students were asked, "What is hypertext?" sixty-nine percent (n=41) of the fifty-nine respondents indicated they did not know. Of that number, 63% (n=26) were female and 37% (n=15) were male. Twelve responses indicated that the student recognized the inherent connection between hypertext and technology by including mention of the Internet or web sites in some manner. Of these, 25% (n=3) were female and 75% (n=9) were male.

The third question, "List examples of hypertext with which you are familiar or that you have read," received forty-nine student responses. Of these, 78% (n=38) indicated they did not know or were not sure what to list. Again, female students were the majority with 55% (n=21) stating they did not know or were not aware of examples of previously read hypertext versus the 45% (n=17) of their male peers reporting the same. Only eight students indicated an understanding of what might qualify as an example of hypertext with more male respondents (n=7) than female (n=1).

Finally, fifty-two students responded to the prompt, “How would you describe your previous experience reading or using hypertext?” Of those, 71% (n=37) indicated that either they did not have experience or did not know what it was. Sixty-five percent (n=24) of those were female; thirty-five percent (n=13) were male. One female and one male student reported few, if any problems. Three male students reported good experiences reading hypertext. One female and one male student reported a confusing or bad experience reading hypertext.

Table 4.2: Defining Hypertext: Responses From The Technology Autobiography

Prompt: What is electronic text?	
Total Responses, n=61 54%, n=33 Total Negative Responses (do not know)	61%, n=20 Female Negative Responses 39%, n=13 Male Negative Responses 41%, n=25 Recognized association between electronic text and computers/technology
Prompt: What is hypertext?	
Total Responses, n=59 69%, n=41 Total Negative Responses (do not know)	63%, n=26 Female Negative Responses 37%, n=15 Male Negative Responses 20%, n=12 Recognized association between hypertext and computers/technology
Prompt: List examples of hypertext with which you are familiar or that you have read	
Total Responses, n=49 78%, n=38 Total Negative Responses (do not know)	55%, n=21 Female Negative Responses 45%, n=17 Male Negative Responses
Prompt: How would you describe your previous experience reading or using hypertext?	
Total Responses, n=52 71%, n=37 Total Negative Responses (do not know)	65%, n=24 Female Negative Responses 35%, n=13 Male Negative Responses

It is clear from reading the students’ responses prior to the reading assignment that the majority either did not understand or were not familiar with the terms electronic text or hypertext. This implies that perhaps up until now, there has been no reason for them to be concerned with the terminology or, considering that 91% previously reported using the computer for entertainment and 78% for research (Table 3.2), they have been using these links since the

first time they entered the Information Highway, but may not have taken the time to fully consider the potential uses or benefits that clicking on the blue or underlined text on a web page.

Contrary to their pre-reading revelations, responses gathered in the Post-Reading Questionnaire revealed that students *did* have some understanding of the functionality hyperlinks offered. In three related questions, students’ comments regarding their navigational movements revealed clues about their awareness of the existence of hyperlinks in the articles as well as how that influenced their reading strategies. These data are reported in Table 4.3.

Table 4.3: Reported Movements and Actions Taken While Reading

In what way(s) was the article helpful or not helpful in the formation of your argument or position? What actions did you take based on that?	
Total Responses, n=64 98%, n=60 No action taken; noted existing links	22%, n=13 Female Response 30%, n=18 Male Response
What actions or movements stand out in your mind that you took while reading in order to develop your argument?	
Total Responses, n=62 1%, n=1 Noted accessing links	1%, n=1 Female Response 0%, n=0 Male Response
Was the article helpful in suggesting to you any additional information you might need in order to write the paper? What actions did you take based on that?	
Total Responses, n=64 27%, n=17 Responses noting more information available 0 reported taking any action	11%, n=7 Female Responses 16%, n=10 Male Responses

In a two-part question, students were asked in what ways the reading helped inform their argument and what actions that knowledge inspired. Examples of students’ comments are listed in Appendix E. The majority of the responses (98%) indicated an unawareness of taking any actions; however, 22% of the female students and 30% of the male students noted the existence of hyperlinks in the article, but admitted not accessing them for reasons that included distrust of Internet sources. The second question was more direct, “What actions or movements stand out in your mind that you took while reading in order to develop your argument?” Sixty-four

students responded to this question with one female responding that the available links would be helpful were she to pursue further research, “There are also links that explain what immigration is and how it has developed over time, which are helpful if I were to do further research.”

The last question asked if the article suggested additional information that may be helpful and what action(s) that information may have inspired. Of the 64 total responses evenly divided between female and male students, 11% (n=7) female responses indicated an awareness of more available information via links; however, no one indicated accessing the links. Sixteen percent of the total responses indicating an awareness of more available information via hyperlinks came from the male respondents; none indicated accessing the links.

It is clear that the majority of the students recognized the potential to access more information; however, most made conscious decisions not to take action. These data are confirmed through the analysis of the time logs provided through the application programmed for this project. These time logs were automatically generated for each participant at the end of her or his session. Ultimately, logs were available for 83% (n=63) of the 76 students who began the study. The difference between the number of students beginning the project and the number of logs can be explained. First, students were not obligated to complete any part of the exercise; however, since they were receiving extra class credit, there was some incentive to participate. As reported earlier, there were several students that experienced technical difficulties and one who may have decided not to continue. There were ten entries on the data logs with no time logs attached but data that revealed the students completed the assignment. This may have resulted from either a programming, technical, or user glitch; however, the reason has not been determined. Early in the first session, there was one unexpected problem in which the link to the primary article routed the user to a different article. Apparently, the title of the article

selected for this project had been reworded by the website's editor between the time it was selected for this project and completion of the project's programming. The URL was not verified prior to loading the application for the project; therefore, the change was not detected prior to the beginning of the first research session. This "glitch" in the application influenced the responses and possibly the motivation of at least five students.

Using the 63 available logs, it was determined that the average time spent on the Technology Autobiography was 9 minutes 40 seconds and the average time students spent on the entire project was 35 minutes 16 seconds. In addition to general considerations of time, these logs were designed to reveal navigational strategies that may not be apparent in the student's responses by recording the start times and the amount of time spent each instance in which a student navigated to a URL.

A review of the available time logs revealed 8% (n=5) navigated away from the main article. Of these, there were three female and two male students. Details regarding the activities of these five students are explained below.

- Female A remained on the article's main page for 9 minutes 50 seconds. She then accessed a link, staying there for 1 minute 9 seconds at which time she rerouted back to the article where she remained for an additional 3 minutes 34 seconds.
- Female B remained on the article's main page for 4 minutes 8 seconds. She then accessed a link, remaining there for 10 minutes 6 seconds.
- Female C remained on the article's main page for 3 minutes 7 seconds. She then entered "sororities" into Wikipedia's search engine and navigated away from the assigned article. She remained there for 9 minutes 36 seconds. She did not access and complete the post-reading questionnaire.
- Male A remained on the article's main page for 3 minutes 32 seconds. He then accessed a link and remained there for 2 minutes 44 seconds. He accessed another link and

remained there for 13 minutes. He then accessed another link, remaining there for 7 minutes 42 seconds. Accessing one more link, he remained there for 1 minute 14 seconds after which he returned to the article's main page. After remaining there for an additional 3 minutes 20 seconds, he logged out.

- Male B remained on the article's main page for 4 minutes 1 second. He then navigated to another website by typing in a URL where he remained for 1 minute 20 seconds. He returned to the article's main page where he remained for 1 minute 20 seconds.

Hypertext and hyperlinks are defined by the author (authors in this case since Wikipedia is a public forum with multiple submitters) to guide the reader; however, the reader is in control. In other words, she or he must make decisions that will culminate in their desired results (Sosnoski 162). In the case of this study group, the majority apparently did not realize that there may be some intrinsic value in accessing more information past the article's main page or, since incentive for participating in the exercise did not translate into something as tangible as a grade, perhaps they simply were not motivated enough to navigate away from the main article for other than personal reasons (sororities, for example).

If the success of this hypertext reading experience is based upon whether or not the students accessed links, then the exercise may have failed. A successful hypertext reading experience demands an active reader, one that is willing to engage the information by navigating into the web of available information. This is one way in which hypertext has redefined how we read (Landow 6).

The students reading the text for this project were active readers. These students, self-proclaimed instant messengers and social networkers, are by virtue of their preferred usage of technology, bloggers. Blogging is the type of information sharing inherent to messaging and social networking sites. These readers know how to read and respond in those venues. "They

take an existing text and add to it” (Landow 9). In the data analyses, it is not apparent that the students applied active reading skills by virtue of their inactivity in regards to accessing hyperlinks. Or did they? Perhaps those skills informed their strategies and their opinions that a user-edited online encyclopedia like Wikipedia should cause a large amount of concern throughout the study group.

Source Credibility As An Influence

It was not clear if there was one primary influence upon any individual student’s decisions regarding the use of hyperlinks to access more information; however, data reported in Table 4.4 points to an overall distrust of Internet sources in general. For example, when asked if the node of information was credible, 43% (n=29) clearly stated it was not. Of these, 59% (n=17) were female and 41% (n=12) were male. Wikipedia’s public editing feature was the most frequently stated reason students considered the node not credible with 55% (n=16) making reference to that inherent trait of the site, “Wikipedia is not a credible source because of the fact that people can go on this site and change the information.” Two students (one female and one male) indicated a general mistrust of any information found on the Internet as their reasons why the node was not credible; however, one male student issued this contradictory statement, “Yes [it is credible] because it was found on the web site.” Two students (one female and one male) responded with uncertainty, one of whom stated his reason was being “told by [professors] and high school teachers alike that Wikipedia is not a credible resource.” Eighteen students responded positively regarding credibility, mentioning references or sources cited in the article as the reason, “This site also contains references which [are] helpful.” Samples of students’ comments are found in Appendix E.

Table 4.4: Node Credibility

Do you find this "node" of information credible?	
Total Responses, n=66 43%, n=29 Not Credible	59%, n=17 Female Responses 41%, n=12 Male Responses
Please explain your response (reason):	
Total Responses, n=29	55%, n=16 Public Editing Feature of Site 7%, n=2 Mistrust of Information on Internet 7%, n=2 Uncertainty Regarding Site

In a related question, students were asked to rate a selection of hyperlink sources. Table 4.5 lists the rated responses to questions regarding hyperlinked sources. A total of 66 responses were received for four hyperlinked source categories students were asked to rate in order of importance from one to five, with one being the least valued. Considering the sources that received scores of 4 and 5, the top three sources were identifying opposing points of view (53%, n=35), identifying experts (44%, n=29), and locating sources (39%, n=26). Finding a subject rated lowest (55%, n=36).

Table 4.5 Rated Hyperlinked Sources

You are developing a researched argument using hyperlinked sources. Place the following hyperlinked sources in order of importance with 1 being the least important.					
	1	2	3	4	5
Identify Experts					
Female	5	4	10	9	6
Male	6	5	7	9	5
Identify Opposing Points of View					
Female	2	6	5	9	12
Male	5	7	6	8	6
Find a Subject					
Female	20	0	6	1	7
Male	16	2	4	3	7
Locate Sources					
Female	4	13	6	3	7
Male	2	7	7	9	7

This group of students, most of whom were not long out of high school, seemed to be extremely wary of the information presented by virtue of its location. Research into the behavior of first-year university students revealed at least one researcher who believed “students tend to pick up certain stock rules of thumb without fully assimilating the broader contexts that make these points relevant” (Lovoy 11). Indeed, these data reveal an inherent distrust of anything found on the Internet rather than a specific application of criteria designed to authenticate resources. That kind of carte blanche categorization may undermine research initiatives in an ever-increasing automated information society. This is especially true considering that access to a university library is extremely convenient via the Internet as is access to large public libraries including the Library of Congress (<http://www.loc.gov/index.html>). Scholarly Internet searches are now made easier when one considers that “Google and Yahoo have entered into agreements with major libraries to index their collections” (Landow 39).

Influences Upon The Reading Process Technology and Programming

In addition to the problem reported earlier in which the article’s title change affected the URL, a programming issue that was revealed in the data analysis may have strongly influenced students’ navigational choices. By design, the program should have loaded the article on the Wikipedia site on the Internet. However, one important functional feature was missing. The “back” button (Figure 1) was inoperative. This meant that anyone who accessed a link, if they did not know that the back function could be achieved by right-clicking their mouse, was unable to go back to the article unless they retyped the URL. There was little data available to determine the number of times this occurred with the exception of students’ comments regarding

the article's level of reading difficulty. In this section, three students' mentioned the inoperative back button as problematic in some manner related to navigating the article.



Figure 1, Back Button

Navigation button located on the upper left of every Web browser's tool bar. It allows the user to return to the document previously viewed.

The Article's Level of Reading Difficulty

Students were asked to rate the article's level of reading difficulty on a scale of 1 to 5 with 1 being the least difficult. Of the 66 student responses, 18% (n=12) rated the article 1, 48% (n=32) rated the article 2, and 27% (n=18) rated the article 3 (average difficulty). Three students rated the article 3 and one rated it 5 (very difficult). Sixty-five students offered comments to explain their ratings. Of these, 12% (n=8) specifically addressed hypertext. Examples of these comments are listed below; others are listed in Appendix E.

- I thought the reading was relatively easy. The blue hypertexts get annoying while reading but it may be necessary for further information.
- I found it hard to stare at the computer screen. It is also distracting to have so many highlighted words that I can click on. It made me want to research other subjects and get off topic.
- The hypertext reading experience is a little bit more difficult in a sense that you have to read over different colors of text as if you were reading a book or regular article and if you wanted to learn more on a single focus of an article you would have had to click on a link that brought you to another page.
- The major information had hyper-links in case the reader was unaware of the term.

Next, students were asked if they had encountered any difficulties while reading this article. Of the 66 student responses, 86% (n=57) reported no difficulties. Of that number, 41% (n=27) were Female and 45% (n=30) were male. Two female students reported problems understanding words in the article. Other reasons for difficulty included inability to focus, reading on a computer screen, following the instructions, and references being difficult to follow. The two male respondents reporting an inability to focus and the “blue text” (Appendix E).

Design was one area that rated many comments. In addition to comments like, “The blue hypertexts get annoying,” and “It was also distracting to have so many highlighted words to click on,” there were positive comments. Several students observed page design traits, offering comments like, “The article is organized well, with bold headings” and “The way it was split into different categories really helped [get me] through it.” These data are reported in Table 4.6 and comments are reported in Appendix E.

Table 4.6: Reported Reading Difficulties

On a scale of 1-5 with 1 being the least, rate this article's level of reading difficulty?					
Rating	1	2	3	4	5
Female Responses	4	21	7	0	1
Male Responses	8	11	11	3	0
Did you encounter any difficulties while reading this article? Please explain.					
Total Responses, n=66		41% (n=27) Female, No Difficulty			
86% (n=57) Reported No Difficulty		45% (n=30) Male, No Difficulty			

Table 4.7 reports student responses to a prompt asking if reading the hypertext document was similar to or different from reading a book or magazine article and to explain their response. Of the seventy-three responses, 26% (n=19) indicated similarities between the hypertext document and a printed article. More students believed the hypertext reading to be different (48%, n=35) Of that number, 57% (n=20) were female and 43% (n=15) were male. Differences

listed included getting sidetracked, difficulty focusing, text seemingly never-ending, more headings and sub-headings, the presence of hyperlinks, and font colors. Five students described hypertext reading as easier; one student described it as more difficult. These comments are included in Appendix E.

Table 4.7: Reading Similarities To Printed Media

Is reading this type of document similar to or different from reading a book or magazine article? Please explain your response. For example, if this reading <i>is</i> different, explain how or why.			
Total Responses, n=73	Overall	Female	Male
Similar	26%, n=19	63%, n=12	37%, n=7
Different	48%, n=35	57%, n=20	43%, n=15
Other ¹	26%, n=19	21%, n= 4	79%, n=15

¹Other responses did not specifically state similar or different or response did not address prompt.

Comparing the responses regarding reading difficulties and the similarities to printed media, contradictions arise. While 86% of the respondents reported little to no difficulty (Table 4.6), a review of the students’ comments regarding the hypertext article’s similarity to printed media revealed difficulties. For example, one female respondent noted, “It is different because it is easy to get sidetracked while reading this information.” Several comments reiterated concerns regarding credibility, which seemed to imply a difficulty. Still another commented, “It is harder to read something online because I get the feeling that it never ends. I would rather read a book or magazine,” a comment that may seem surprising from a member of the Net Generation. An attitude that may seem more in line with expectations of a “Netter” may be one student’s comment, “A book is for everyone, this is more for the newer generation.”

That student’s stated preference for a book reminds us that even in the information age readers rely heavily on “systematic patterns of information” (Charney 101). We may hold fast to what Charney calls the “romantic view of hypertext that aims at enabling imaginative leaps and

connections between disparate texts, facts, and images”; however, the way hypertext reading works is contrary to the cognitive models we understand (101). That point is not lost when analyzing the comments from this small sampling of first-year students. These students, for all their expertise with computers and technological gadgetry, seem to offer contradiction after contradiction. First, they don’t know what hypertext is. Next, they can make a connection between the term “hypertext” and technology. Later, they admit an awareness of the existence of hyperlinks on a web page. Ultimately, they still communicate a dislike and/or a distrust for the technology.

These contradictions may be due in no small way to the fact that these students are what Salmerón, Kintsch, and Cañas categorize as “low-knowledge readers.” They are not clueless; they are inexperienced, but would benefit from a more coherent text (1159). This is not to say that a hypertext is out of the question; however, based upon the comments reviewed, more exposure and experience may influence their decisions to click or not to click. Inexperience may deter literacy achievements because students need to be willing to take that leap of faith, access the hyperlink, and embrace new information.

Summary

This data analysis revealed a group of students, primarily 18 year-old freshmen, who considered themselves technologically proficient. They are owners and uses of most modern technological gadgets and profess widespread use of the Internet and Internet search engines. It is interesting to note that despite those confessions, the majority of these students did not clearly recognize how hypertext and hyperlinks related to their use of instant messaging applications, social networking applications, or grammar and spell check functions in word processing

applications (Table 4.1). To their credit, many were aware of some inherent connection between technology and something called “electronic text” or “hypertext.”

Based upon their comments and the activity logs, students opted to read the article from top to bottom with few to no diversions resulting from available hyperlinks. As reported, there was at least one technical problem that may have influenced that decision; however, their comments reveal that more often than not, they made a conscious decision *not* to click on available links. These decisions were made despite clear indications in their comments that they were aware of the presence of links that offered opportunities to access definitions, explanations, and citations.

What influenced these decisions? First, issues of credibility ranked high in the minds of these students and they overwhelmingly seemed wary of any information accessed online. Clearly, the fact that this reading exercise was pulled from Wikipedia influenced these comments; however uncertainty surrounding the credibility of references and citations were also noted.

An influence that was not anticipated to surface as a distraction was the inherent trait of hypertext to be colored, usually blue, on a web page. In addition to the highlighted hyperlinks, the presence of colored text anywhere on the web page seemed to cause distractions. While the issue of distracting font colors was not specifically noted by students as reasons for not accessing links, it is noteworthy especially considering the efforts that technical writers spend making certain textual objects more apparent in their web page designs.

In the early analysis, a disparity between the responses of the female and male students surfaced. In two categories, more female than male students admitted to not knowing what electronic text or hypertext was; however, the gap narrowed slightly when students were asked to give examples of hypertexts previously read. Nevertheless, the gap reemerged when data

regarding credibility of the node was tallied showing that 59% of the females did not find the node credible versus the 41% of the males who shared the same opinion. Reasons for these disparities were not revealed in this study.

This research involved a relatively small student sample that clearly defines the limited scope of the findings. The 76 students were mostly the same age, the same level in school, not especially diverse from an ethnic or racial perspective, and fairly equally divided by gender. Nevertheless, the information gathered does suggest attitudes and influences that are important considerations. The following chapter will synthesize these data with the research to offer conclusions and recommendations.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

Conclusion

Today, diverse technology applications in universities no longer reside solely in the classrooms of scientists and engineers. These technologies influence modern compositionists as much as they inspire programmers in Computer Science Departments. The impact of technology upon the composition classroom is due in no small part to its influence upon the ways we read and write.

We are a literate society and as such we are familiar with traditional structures of text and are comfortable with the ways in which they are read (Charney 102). Indeed, “the assumption that reading is a sequential and continuous process is the foundation on which everything else rests” (Slatin 871). As technology developed and became affordable and available to a broad range of the population, we began to redefine the ways we look at a text as well as the ways we teach readers and writers beginning in pre-school. As pre-schoolers, these students more than likely read some of their first stories on a computer screen. Those preschoolers are today’s first-year composition students, students for whom literacy has taken on an expanded definition, one that includes the medium through which they socialize and relax; the medium that has provided enrichment to their learning experiences in school prior to college – computers. The acquisition of literacy, its intersection with technology, and the importance of that intersection is at the heart of this discussion.

To define literacy in this context we must embrace the prevalence of electronic text, specifically hypertext, and include considerations for the development of the skills necessary to assimilate information read hypertextually. Rather than mourn the loss of an easy chair and a good book, it seemed more beneficial to investigate a perspective toward reading online to which

the Net Generation may relate. A logical starting point for that development was found in “Border Times: Writing and Being Written in Hypertext,” in which Johndan Johnson-Eilola tells us that “hypertext *is* writing and reading” (5). However, simply accepting the fact that computer technology, like its ancient predecessor the printing press, had evolved composition into a new realm did little to explore what that meant to the composition classroom, specifically the first-year composition classroom. This was primarily because many assumptions were being considered regarding the technological proficiencies of first-year composition students; yet, questions remained regarding their technological proficiencies, including their online reading and writing skills.

It seemed dangerous to assume that simply because students could create a MySpace page complete with animated, glittery graphics and a personal video-taped message or IM their friends across the room faster than the instructor could ask that phones be put away, that they understood academic applications for the technologies they took for granted. This inspired inquiry into prior research that involved students entering college out of high school.

After reviewing existing research, it was apparent that while first-year students (freshmen) had been included in subject groups for hypertext reading research projects, they had not been the sole target population for any one project. As a result, this project was designed to begin investigating how this population may react to reading hypertextually with a specific goal to develop an argument. Anticipated results included answers to several questions. Would the students access the links? Would they navigate deeper and deeper into the Web to inform their argument or, if they did navigate in, would they abandon the topic for something more interesting and/or unrelated? Would the stimulus of interactive links that included graphics prove distracting or inviting? In addition, there was some speculation that students may opt for

the path of least resistance, reading as little and as quickly as possible — enough to satisfy the requirements of the assignment.

The analysis revealed that while the study group rated themselves highly proficient users of Internet search engines, email, social networking, and word processing applications, the majority initially did not recognize a relationship between the actions they take as users of those applications and hyperlinks or hypertext. Post-reading responses revealed that the majority of the group either read the article from top to bottom with few to no diversions or they modeled one of James Sosnoski's characteristics of hyper-reading. Since every student response in the Post-Reading Questionnaire was able to respond correctly when asked what the topic of the article was and since the majority was able to comment on how well the article responded to their position on the topic, they all either read, filtered, or skimmed the text (163).

Furthermore, while most *did* recognize the hyperlinks as information portals, they made conscious decisions *not* to access the links for a variety of stated and implied reasons. But why? Data revealed a few specific reasons including technical issues regarding the article's link and the omission of the "Back" button in the application. Other reasons included difficulty focusing, a dislike for reading on a computer, and the limited amount of time allowed in which to complete the exercises. However, these complaints were few and only one student navigated to a site regarding something completely off topic, sororities.

One interesting and unexpected revelation in the responses included several comments regarding distractions, specifically that the blue text, an inherent trait of most hypertext links was annoying. This seems disconnected from the expectations associated with the Net generation, students who participate in high definition gaming tournaments. Nevertheless, these comments serve as a reminder that despite the best efforts of technical writers and web page designers,

every reader approaches a text with preferences and a certain amount of uniqueness. And we must remember that anything that serves as a distraction to the reader, potentially serves as a deterrent to one's acquisition of literacy.

Aggravating students' apparent uncertainty regarding hypertext were their opinions regarding the overall credibility of the article. Did they really ignore the hyperlinked citations because they listened to their high school teacher's warning about the perils of trusting anything on the Internet? The open-response questions clearly revealed an inherent distrust of anything Internet as an acceptable or reliable source for an academic paper. While Wikipedia was often cited as the source of their discontent, it moved from the seventeenth most popular site on the Internet in 2006 (Schiff 36) to eighth in November 2007 (http://www.alexa.com/site/ds/top_sites?cc=US&ts_mode=country&lang=none) and was recently described as "the greatest effort in collaborative knowledge gathering the world has ever known" (Poe 86). Nevertheless, considerations of the site's credibility clearly influenced navigational decisions within this group. In "Online Ethos – Source Credibility in an 'Authorless' Environment," Barbara Warnick argues that online credibility assessments are moving from authorial considerations to "other limiting conditions" that include components of visual rhetoric. Data from this research contradicts that prediction. Data revealed that the reason Wikipedia's credibility was questioned by student participants was primarily due to authorial considerations, specifically the public editing feature of the site.

Recommendations

After reviewing the data, the first natural inclination was to begin by shattering the "urban legends" surrounding the use of the World Wide Web for information sharing (Lovoy 11). Popular handbooks have begun addressing the evaluation of Internet sources. A Writer's

Reference dedicates a short section to “Evaluating Web sources” (340); however, the content is dedicated more to general authorship and sponsorship than truly evaluating the scholarly value of the text. It may be dangerous to assume that the less experienced first-year student will take the time to flip back a few pages to the section “Determining if a source is scholarly” (336) and apply the criteria offered as a guide to the text in question. This handbook and many texts like Everything’s An Argument offer companion websites promoting features like guides to online research. However, as useful and state-of-the-art as these are, if students don’t access hyperlinks during a straightforward reading assignment, we should not assume that they will make the best use of a textbook’s companion website.

Modeling electronic research and scholarly identification techniques will ensure student exposure to the varied electronic avenues through which she or he may pursue their research goals. This is a concept related to the library seminar usually offered to first-semester composition students, many of whom may have never before been in a library like the ones on the campuses of major universities. Unfortunately, anyone who has taken a class of first-year composition students for a library seminar knows that in less than one hour the research librarian covers so much material that even we may have to pause to try to assimilate all the information. Effective modeling would serve as an extension of that seminar and should no longer be reserved for graduate researchers. These exercises will also promote the development of search skills designed to help students understand that the search engine cannot “think” like the human mind. As sophisticated as they are, they are still limited to matching key words and terms, omitting options that may not meet a programmed match criteria. Searching skills are critical to the development of research skills; effective use of available hypertexts underlies it all. Technology is a necessary and available tool for all researchers and clearly, this research group was either

unwilling or unable to make use of what may have proven to be credible resources at their disposal.

The use of technological proficiency assessments like the Technology Autobiography used in this study proved invaluable to this research. These exercises, the modern adaptation of a literacy autobiography, are gaining in popularity as more and more instructors integrate technology into their pedagogies. They offer students an opportunity to “consciously reflect on their relationship with technology other than to consider how best to engage with it as a tool” and instructors an opportunity to glimpse into the technological experiences and attitudes of their students (Kitalong et al. 230). As an extension of the initial assessment, a late-semester reflection on the autobiography seems certain to reveal growth and parallels the realization one experiences when she or he compares a first draft of an essay to the final version. In addition to these, the use of technology proficiency assessments may prove integral to creating assessment criteria for new technology-rich classroom applications, especially considering that there will certainly be students who do not share equal proficiency levels with technology.

For these Net Generation students, writing and authoring are one in a process that includes not just composition, but design and layout (Slatin 871). Because of the modern students’ experiences and proficiencies as instant messengers and bloggers, instructors of composition should be encouraged to actively participate in class or course blogs (not only for online courses), thereby offering the potential to model reader-response techniques, encourage the conversation, and apply hypertext reading strategies. Blogs are an excellent venue through which readers “take an existing text and add to it” (Landow 9). Blogs offer added value as a means through which a sense of community is developed, communities that mimic the electronic

lifestyle to which many of these students already belong and encourage the development of the active reading skills Landow reminds us is demanded in the hypertext environment (6).

The blogs students refer to are often very public venues, which leads to an inherent trait of the hypertext environment - its global audience. Based on the responses from this group of seventy-six first-year students, the advanced technical skills necessary to limit electronic access to texts, and in turn limit or narrowly define/control one's audience, are not yet developed. This means that inexperienced writers would be served well to understand that a global community means that one imagines a potential audience whose sheer numbers and diversity are almost impossible to define. The vastness and diverseness this implies demands attention to the ways in which we consider the influence of technology on all the canons of rhetoric and how we communicate these to inexperienced writers and readers.

Discussions of the intersection between rhetoric and technology will benefit other first-year composition objectives. Since every student is not going to graduate and write the next great American novel, many take first-year composition begrudgingly. The effective use of technology and hypertext reading and writing applications in first-year composition may serve as an introduction to professional writing and prove an enticement or the catalyst through which students are able to experience modern professional writing texts and opportunities. Applications like digital texts, already commonly practiced in advanced writing courses, should soon appear in first-year composition classes. Clearly, the students responding to this research project's technical proficiency queries did not indicate that level of proficiency; however, the technology is available and, in some cases, free, as in the case of Windows Movie Maker[®]. With this application, students can take PowerPoint slides or digital images and create DVD recordings complete with sound and transitions. While these are not sophisticated digital

productions like those found in the “Charlestown Digital Stories” (www.umbc.edu/stories), they will introduce students to the canons of rhetoric in a modern context and help prepare them to take their compositions to the next level.

Further Research Initiatives

Hypertext reading research like this study focuses on how or if readers divert from traditional cognitive reading patterns and why they make certain navigational decisions. This project design did little to direct their reading down the hypertext path. By design, the decisions were left up to the reader; however, a study designed to motivate the reader to dive into hyperspace may prove beneficial in revealing something this study could not have: if the reader accesses link after link, at what point does she or he become disoriented, if at all?

Finally, this research revealed that a significantly higher number of female students than male students admitted that they could not define or identify electronic text or hypertext (Table 4.2). Responses to almost all other queries were fairly evenly divided along gendered lines. While these data did little to explain this difference, the implication that any female from a demographically similar group with an admitted ignorance about an integral technical component of applications with which they profess a high user proficiency is important. Further inquiry with a wider population sample may reveal important information about the technological education and experiences of young women.

Final Thoughts

Many first-year composition students seem to dread or bemoan the writing requirements of their university’s composition program, seeing them as unnecessarily burdensome and unrelated to their as-yet undeclared majors. However, as generations of students before them realized, most manage to survive the writing and the research; some even discover enjoyment and a sense

of accomplishment once drafts are reviewed and a final essay is generated. Ideally, more than one will experience an epiphany through which he or she realizes that the reading, research, group presentations, and draft upon endless draft actually are relevant to their personal and academic success. In the meantime, instructors of composition face ongoing challenges to remain abreast of the trends and influences that affect the ways we teach. It falls to us to adapt pedagogies that make the best use of all the resources at our disposal, continue to value our historical traditions, and embrace the latest technologies, not the technologies of a year ago. This means that we can no longer settle for being the last department on campus with cutting-edge technology in our classrooms nor can we be the last to learn the latest applications. We must demand a higher standard from our first-year students insofar as their use of technology to read, write, and research are concerned. We must understand that next semester's first-year composition students already know how to send an email and perform simple searches; we must raise the bar for ourselves as well as our students. While this is a challenge, it is a necessary one that will continue to drive our research initiatives and ensure our success as instructors of modern composition.

**APPENDIX A: GENERAL INSTRUCTIONS
HYPERTEXT READING RESEARCH PROJECT**

Thank you for participating in this Research Project.
 Using the Icon on your desktop, start the WICKTRAK program.

Username: Enter your first and last name
 Password: FISCHER113
 Click: OK

Login <input type="button" value="X"/>	
User Name:	<input type="text"/>
Password:	<input type="text"/>
<input type="button" value="OK"/>	<input type="button" value="Cancel"/>

Click GO

The next screen shows login to Pre-Assignment Page.
 Enter Username: First and Last Name
 Enter PID
 Select Class Session Time
 Click SUBMIT

Enter the Secret Code when you are finished with the instructions		<input type="button" value="GO"/>
"Research on Hypertext Reading and Research Strategies"		
COMPII Login Page		
Username: (first name and last name)		
<input type="text"/>	<input type="text"/>	
PID:		
<input type="text"/>	<input type="text"/>	
Class Session:		
▼ (Select from the Drop-Down Menu)		
<input type="button" value="SUBMIT"/>	<input type="text"/>	

Screen shows Informed Consent Page

Read everything and then click SUBMIT to acknowledge that you wish to participate in today's Research Project

	GO
Informed Consent to Participate	
PID:	
Class Session:	
▼ (Select from the Drop-Down Menu)	
SUBMIT	

Technology Autobiography

Complete the Student Technology Survey.

Answer all of the questions and click **DONE** when finished.

APPENDIX B: TECHNOLOGY AUTOBIOGRAPHY

STUDENT TECHNOLOGY SURVEY

Gender

- Female Male

Race (mark one or more to indicate what you consider yourself to be)

- | | | | | |
|---|--|--|---------------------------------------|---|
| <input type="checkbox"/> Black | <input type="checkbox"/> American Indian | <input type="checkbox"/> White | <input type="checkbox"/> Asian Indian | <input type="checkbox"/> Spanish |
| <input type="checkbox"/> African-American | <input type="checkbox"/> Native Alaskan | | <input type="checkbox"/> Chinese | <input type="checkbox"/> Hispanic |
| <input type="checkbox"/> Negro | | | <input type="checkbox"/> Japanese | <input type="checkbox"/> Latino |
| | | | <input type="checkbox"/> Vietnamese | |
| <input type="checkbox"/> Filipino | <input type="checkbox"/> Native Hawaiian | <input type="checkbox"/> Other Pacific Islander
(specify) _____ | | <input type="checkbox"/> Other (specify)
_____ |

Age

- 18 – 25 26 - 30 31 – 40 41 – 50 > 50

Level in school

- Freshman/woman Sophomore Junior Senior

For what types of activities do you use a computer? Check all that apply

- | | | | | |
|---|-----------------------------------|--|-------------------------------------|---|
| <input type="checkbox"/> Curiosity | <input type="checkbox"/> Email | <input type="checkbox"/> Entertainment | <input type="checkbox"/> Gaming | <input type="checkbox"/> Use these blanks to list other activities (specify)

_____ |
| <input type="checkbox"/> News | <input type="checkbox"/> Research | <input type="checkbox"/> Shopping | <input type="checkbox"/> Job Search | |
| <input type="checkbox"/> Social Networking, e.g. chat, blog (specify) _____ | | | | |

Check all of the locations in which you use computers

- Computer Lab Home School Library Work Other (specify) _____

On a scale of 1-5 with 1 being the least, how would you rate your level of expertise using these applications?

America Online	1	2	3	4	5	Adobe Acrobat Reader	1	2	3	4	5
HotMail	1	2	3	4	5	Adobe Acrobat Professional	1	2	3	4	5

MSN Messenger	1	2	3	4	5	Photoshop	1	2	3	4	5
PowerPoint	1	2	3	4	5	Audio/Video Apps:					
Word	1	2	3	4	5	Adobe A/V	1	2	3	4	5
WordPerfect	1	2	3	4	5	Media Center	1	2	3	4	5
Works	1	2	3	4	5	MP3 Converter	1	2	3	4	5
						Other: _____	1	2	3	4	5
						Other: _____	1	2	3	4	5
						Other: _____	1	2	3	4	5
						Other: _____	1	2	3	4	5

On a scale of **Never**, **Sometimes**, or **Always**, rate your use of the following

Performed academic research using the Internet	N	S	A
Accessed electronic class reserves in the library	N	S	A
Utilize spell and grammar check options in word processing software	N	S	A

Please respond **Yes** or **No**

I own/use a desktop PC or a MAC	Y	N
I own/use a Laptop/Powerbook/Notebook	Y	N
I own/use Personal Digital Assistant (PDA) PDA or Palm Computer	Y	N
I own/use an iPod®	Y	N
I regularly utilize Internet search engines	Y	N

If you answered “Yes” to the last question, which search engine(s) do you use. List in order of preference.

I have had access to a computer the majority of **Y** **N**
my lifetime

If you answered “No” to the last question, how long have you been using a computer?

Please respond to the following questions

What is electronic text?

What is hypertext?

List examples of hypertext with which you are familiar or that you have read

How would you describe your previous experience reading or using hypertext?

You may use this section for any additional comments, explanations, or information you think may be useful or relevant

Thank You for participating in this survey

APPENDIX C: READING RESEARCH ASSIGNMENT INSTRUCTIONS

GENERAL INSTRUCTIONS

Please read all instructions. Once you have read the instructions, indicate that you have read and understand all instructions by selecting **DONE**. If you have any questions regarding the instructions, please ask.

This is a two-part assignment. To complete the first part, you will read an article. To complete the second part, you will respond to a series of written questions.

RESEARCH ASSIGNMENT PART 1

Access and Read the hypertext article listed below. The article will provide the basis for an essay in which you will develop an argument on this particular subject.

Throughout your reading process, a researcher will be observing your activities. The job of the researcher is to observe, not to instruct; however, the researcher is available to answer questions related to the project instructions.

Enter the code posted on the board and click the **GO** button.

Click the **START SESSION** button and enter “Illegal Immigration” into the Search Box on the lower left side of the page. This will open the article you are to read. If you have difficulties accessing the page, you can enter the following URL address into the URL address box:
http://en.wikipedia.org/wiki/Illegal_immigration .

When your reading is completed, please select **END SESSION** to access Part 2.

RESEARCH ASSIGNMENT PART 2

Your final task is to complete the Post-Reading Questionnaire. This is an online survey. Type in the following URL and Enter: <http://www.askdrsegal.com/hp/hppostindex.htm>. Enter your username, PID, and class session time. Click **SUBMIT**. When you complete the survey, click **DONE** to exit the survey and submit your responses.

APPENDIX D: POST-READING QUESTIONNAIRE

POST-READING QUESTIONNAIRE

Please respond to the following questions based upon your reading. You may refer to the article.

What is the topic, problem, or issue discussed in the article you read?

Regarding your position on this subject: What is your position on this subject? In what manner and how well does the article address your position on this subject or inspire your argument?

Do you find this “node” of information credible? Please explain your response.

In what way(s) was the article helpful or not helpful in the formation of your argument or position? What actions did you take based on that?

You are using the information from this article to argue a position. To whom is *your* argument addressed and why?

What actions or movements stand out in your mind that you took while reading in order to develop your argument?

Was the article helpful in suggesting to you any additional information you might need in order to write the paper? What actions did you take based on that?

You are developing a researched argument using hyperlinked sources. Place the following hyperlinked sources in order of importance with 1 being the least important.

Identify Experts Identify Opposition Find a Subject Locate Sources Points of View

1 2 3 4 5

On a scale of 1-5 with 1 being the least, how would you rate this article's level of reading difficulty?

Considering your response to the previous question, how would you describe this hypertext reading experience? Please try to explain your rating of the ease or difficulty of this reading experience.

Is reading this type of document similar to or different from reading a book or magazine article? Please explain your response. For example, if this reading *is* different, explain how or why.

Did you encounter any difficulties while reading this article? Please explain.

You may use this section for any additional comments or explanations; use the back of the page if you need additional space

Thank you for your participation.

APPENDIX E: STUDENT RESPONSES

OPEN-RESPONSE QUESTIONS, TECHNOLOGY AUTOBIOGRAPHY

Prompt: What is electronic text?

Sample Responses from Female Students:

1. no idea
2. text found on the internet
3. text that is presented electronically
4. I don't know
5. Text that is read from an electronic device such as computers, ipods, cd players
6. I am not sure
7. Text that appears on a computer.
8. Text done electronically
9. I am really not sure what an electronic text is.
10. I honestly do not know what electronic text it.
11. Text that is produced and transmitted electronically, such as text messages and emails.
12. Not Sure
13. T9, texting on the phone
14. Electronic text is any writing that is present in a computer display. Wither it be on a website, web page, browser, program, or otherwise.
15. I am unfamiliar with this term. I am assuming it is any text that is displayed electronically

Sample Responses from Male Students:

1. I don't know
2. electronic text is the posting of letters on a digital device of sorts be it a computer, cell phone, etc.
3. documents that are viewable on the screen either, online or on an application program
4. not sure
5. Text that is within a computer
6. I have no idea
7. Letters on a computer screen
8. I am not sure what electronic text is.
9. Electronic text is mail that you send through a server such as the phone line or Internet.
10. Text that is in a form that computer can store or display on a computer screen.
11. I do not remember.
12. Electronics text is text that a computer understands and uses to translate letters and numbers into web pages, html contexts and images.
13. electronic text are numbers and letters created by the binary system and used on the computer.
14. NC
15. From a computer science standpoint, I really don't know what this is.

Prompt: What is hypertext?

Sample Responses from Female Students:

1. the http part of the URL
2. link on the Internet
3. don't know
4. not sure
5. I don't know what hypertext is
6. I have no idea.
7. Something that deals with an online article
8. I think it has something to do with internet websites but I'm not sure.
9. I don't know
10. I am unfamiliar with this term

Sample Responses from Male Students:

1. I don't know.
2. hypertext is when something is loaded into a text based display program such as importing text to a pdf file format, or it is text coding
3. This is text that is shown on the internet, primarily on web pages
4. Not sure
5. Text on websites.
6. I have no idea
7. a sentence with a link to the internet
8. It is when the text is a link to another website
9. No idea whatsoever
10. I do not know what hypertext is
11. A computer-based text retrieval system that enables a user to access particular locations in webpages or other electronic documents by clicking on links within specific webpages or documents.
12. Text that open a url when it is clicked on.
13. text in which you click on and it takes you somewhere such as a sight on the internet.

Prompt: List examples of hypertext with which you are familiar or that you have read

Sample Responses from Female Students:

1. dont know
2. I'm not familiar with any hypertext
3. N/A
4. I don't know.
5. reading an article off the web from a news website
6. I cannot remember any
7. idk

Responses from Male Students:

1. I don't know.
2. JavaScript, ruby, etc
3. Not completely sure
4. HTML
5. N/A
6. www.google.com

7. No idea None.
8. I do not have enough information to answer this question
9. Hyperlinks
10. On Wikipedia some of the words are highlighted and when they are clicked on they take you to another source which further explains that word.
11. Hypertext exists on every almost every website. An example is Wikipedia where a highlighted word can be seen on every part of the page. Each highlighted code takes a person to a different page with even more information.
12. Hot linking websites on other websites
13. I'm not familiar with the term "hypertext".
14. www.bestbuy.com

Prompt: How would you describe your previous experience reading or using hypertext?

Sample Responses from Female Students:

1. I don't know what it is, so I don't know
2. not many problems
3. none
4. I have never used hypertext before
5. I don't know
6. N/A
7. I don't have any experience
8. I don't know what that is
9. I may have used it, but I do not know what it is
10. I have had no previous experience
11. It was confusing
12. I can not recall the last time I used them
13. Not quite sure what hypertext is
14. Sorry, can't answer

Responses from Male Students:

1. I don't know
2. none
3. I don't do it too often and my experience was very little until recently
4. Not very high
5. I couldn't
6. Use to run a website
7. N/A
8. Good, depending on I'm not really sure what hypertext is, I know what a hyper link is and I'm putting those two together
9. The most famous implementation of hypertext is the World Wide Web. The documents and applications can be local or can come from anywhere with the assistance of a computer network like the Internet.
10. Very little and long time ago
11. It makes things on websites more ordered and easier to use.

12. I've been researching information for school for a decade now and have experienced hypertext on many WebPages, online encyclopedias and search engines.
13. I have a substantial amount of experience using hypertext.
14. A pain I hate trying to learn the codes for website

Prompt: You may use this section for any additional comments or explanations

Sample Responses from Female Students:

1. I had no idea what that stuff was. Sorry.
2. I'm not really sure what electronic or hypertext is
3. N/A
4. I am not sure what hypertext is. This term is familiar to me but I do not know what its specifics are.

Sample Responses from Male Students:

1. I'm not exactly the most computer savvy person alive (as you can tell)
2. No seeing how I'm not sure what hypertext is, I don't think I can be of any assistance at this point in time
3. N/A
4. If I have used electronic or hypertext at any point in my life, I was not aware of it.

Prompt: Considering your response to the previous question (On a scale of 1-5 with 1 being the least, rate this article's level of reading difficulty?), how would you describe this hypertext reading experience? Please try to explain your rating of the ease or difficulty of this reading experience. *These responses are preceded by the rating the student applied in parentheses.*

Sample Comments from Female Students:

- (2) I thought the reading was relatively easy. The blue hypertexts get annoying while reading but it may be necessary for further information.
- (3) The only reason that this would be a difficult is because there is not a "back" button on the page, so if I click on a hypertext, to get back to the original page, I have to retype the page name.
- (2) I found it hard to stare at the computer screen. It is also distracting to have so many highlighted words that I can click on. It made me want to research other subjects and get off topic.
- (2) This was a good hypertext reading experience. The website was very easy to follow.
- (1) It was very easy to read because it was very organized and sectioned off so I could get a better understanding of each section before I even read it.
- (2) The information and lay out of it was really not difficult to read at all. The way it was split into different categories really helped get through it.
- (5) it was difficult and too long
- (2) The article is organized well, with bold headings of the discussed material. Several definitions are presented of the concept then a discussion of certain areas where the concept is relevant

Sample Comments from Male Students:

- (2) It was fairly easy to read but very long and time consuming.
- (1) this hypertext reading experience was an easy read
- (3) This reading was very rushed
- (1) The hypertext reading experience is a little bit more difficult in a sense that you have to read over different colors of text as if you were reading a book or regular article and if you wanted to learn more on a single focus of an article you would have had to click on a link that brought you to another page.
- (4) I feel I have a good knowledge of computers, so having used wikipedia.com before I think I had a better grasp on the website and reading experience.
- (2) I did notice that there was a lot of hypertext on this webpage but since the links are English, I did not have any problems reading and continuing the article. I thought this reading experience was very easy.
- (1) It is extremely easy to use. Simply click and read.
- (3) The hypertext reading experience was fairly easy to accomplish
- (3) The hypertext reading was just a reading that needed to be completed. The reading was not hard but not an easy read for a beginner either.
- (2) I felt that the hypertext was easy to read. There were not very many and I understood each one anyways.
- (2) The reading was straight forward with direct information. Plus all the major information had hyper-links in case the reader was unaware of what the term was.
- (2) not really comfortable with using it.

Do you find this "node" of information credible? Please explain your response (reason).

Sample Responses from Female Students:

1. No...I've been told that anyone can make a Wikipedia page and I've seen some that are completely the opposite of what credible text books have written in them.
2. No. Wikipedia is never a credible source. It is also very short.
3. No. Wikipedia is not a credible source because of the fact that people can go on this site and change the information.
4. I do not find this information absolutely credible because anyone on Wikipedia can "edit" the content.
5. Wikipedia is said to not be credible because anybody can write on the site and it may contain information that is not true or that is biased...This site also contains references which is helpful.
6. No, because it's found on Wikipedia, which can be changed by anyone who wants to access it.
7. Yes, I found this information credible because it states the sources that were used.
8. I personally do not find Wikipedia credible since anyone can come and edit the topic.
9. Yes because it was found on the web site
10. No, I do not find it credible. Wikipedia is a search engine that anybody can submit information to. So how do I know what I am reading is accurate?

Sample Responses from Male Students:

1. Yes because the references is from very credible work places making the authors credible on their writing.
2. No, Wikipedia is not 100% true.
3. I find this "node" of information to be credible, because there are plenty of factual references and works sited to make this "node" credible
4. no, Wikipedia can be edited by anyone
5. I found this information to be credible because they have a lot information
6. If I were to do a research paper I would never use this site. The main reason is how unreliable the source information is. Anyone can put something on Wikipedia.
7. As told by professors and high school teachers alike that Wikipedia is not a credible resource, i find it to be somewhat credible because it gives you a collection of other peoples information and puts it all into one essay.
8. No, the information can be changed or edited by anyone.
9. I do find this information credible because I have used Wikipedia many times for different assignments. This is a webpage that leaves people with the option of leaving even more information about the subject they read on. This way, all Wikipedia can do is grow.
10. Yes, I would trust the website most of the time but if I was turning this paper in for a class I would also find other sources to back this information up.

Did you encounter any difficulties while reading this article? Please explain.

Sample Responses from Female Students:

- (1) Could not focus
- (1) reading on computer screen
- (2) Understanding words in article
- (1) Technical problem
- (1) Following the instructions
- (1) References difficult to follow

Sample Responses from Male Students:

- (1) "blue text"
- (1) Could not focus

In what way(s) was the article helpful or not helpful in the formation of your argument or position? What actions did you take based on that?

Sample Responses from Female Students:

1. It offered definitions and some information, but nothing more than I already knew
2. It is helpful because it defines it, but it does not give extra info. I did not take any actions.
3. The article was helpful, because when arguing it always helps to know both sides of the position. I would use the information because it is a credible source.
4. I was more interested in the parts that supported my topic because the other parts may or may not be credible. The source is not very helpful but it creates a list of options or topics that can be researched further.
5. It was organized by different categories.

6. Even though there is a reference page, how do I know that the information that was posted was actually from scholarly sources rather a personal opinion on the topic. I didn't take any actions.
7. It was helpful in the way that offered several viewpoints to the subject. I would have explored the different areas of immigration in either a credible site or reference

Sample Responses from Male Students:

1. I have not taking any action based on the reading.
2. it was helpful because it put you right on the subject. and had its own research to support each point
3. the article was helpful because they gave you different things that are happening from illegal immigration
4. The article was very informative, but I feel that I need more than just one source to actually base an argument upon.
5. The article was somewhat helpful in the formation of my argument because it gave me a good collection of information that I could have used from their article however there were insufficient amount of credible resources or links throughout the reading.
6. It did not move me either way on the subject. The article did nothing to sway my stance on this argument
7. Not helpful. . .didn't make me do anything really

Is reading this type of document similar to or different from reading a book or magazine article? Please explain your response. For example, if this reading *is* different, explain how or why.

Sample Responses from Female Students:

1. I believe that it is very different than reading a book or a magazine article because anyone can "edit" the content.
2. It is different because it is easy to get side tracked while reading this information.
3. It's different because you can choose whether to learn more about the subject by clicking on the text or you can stick with the general topic.
4. It was very similar to something you would read in a magazine. The reason being that it has a small amount of information about various things.
5. It is different, It is harder to read something online because I get the feeling that it never ends. I would rather read a book or magazine.
6. I would say that this reading is different from books and magazines because they have sub headings, and sub topics that a lot of books and magazines do not have.
7. I think it is different because it provides more sources and one can conduct more research on the same topic.
8. its different because it is shorter and hold more information in a shorter amount of reading
9. I believe it is different, solely because my reading takes place on a computer where anything can happen. Perfect example, I click one wrong thing and my entire survey was deleted.
10. I find it quite different, because with this movement I had hyperlinks to click on for more information.
11. Yes, similar to reading a magazine; easy and short.
12. This reading is similar to reading books and magazines, although it may not all be real information, the set up and t different because I have trouble staying focused on a computer

screen and it is much easier to focus on a book or magazine because the medium is tangible and right in front of your face

13. Yes, due to the fact that this is an internet source, i constantly questioned its credibility.
14. I like to read from a computer more because I find it to be easier and quicker. More painless.
15. Reading this type of document is different because you see the in-text citations made and you can verify the links to make sure they are credible as you are reading long, versus reading a magazine.

Sample Responses from Male Students:

1. This type of reading id different because I prefer to hold on to something when I read.
2. It's a little different because you receive all the information in one stream instead of having to search for the information.
3. Yes, a book is for everyone, this is more for the newer generation.
4. Like I said in the previous question. This is a difficult reading experience due to the lack of credible resources and the change in color of text.
5. Different, there is more information that can be accessed more quickly from the internet.
6. Reading text off of WebPages is much more organized in my opinion than books and magazine articles. With the help of computers, one is able to navigate almost anywhere on a webpage with much less difficulty than flipping the page.
7. Yes, because if you don't understand something or know anything about it you can click on it to learn more.
8. This reading is different from a book because there is far less information than any research book would cover.
9. It is different for me because I am used to finding information through Internet rather than reading the books
10. It is not similar to reading a book or magazine. This document has its main points highlighted and makes it easier to see and understand the material. Books and magazines make you read the entire thing or else critical information will be missed.
11. Yes its different cause its not 100% truthful. Like I would trust a book more then I would trust the internet.
12. No it is not similar it is different because the amount of information that can stem off from a single page is endless.
13. It is different because it is web based and anyone who has asses to a computer can see the article. Also it is possible to be less credible because it is a web source.
14. yes, it is more current and easier to access
15. It is different because other articles are just a few clicks away, and you can get to what you're really looking for faster than in print.

**APPENDIX F: UCF IRB APPROVAL AND PROTOCOL
SUBMISSION FORM**



Office of Research & Commercialization

March 27, 2007

Kathleen Bell, Ph.D.
University of Central Florida
Department of English
CNH 417A
Orlando, FL 32816-1346

Dear Dr. Bell:

The University of Central Florida's Institutional Review Board (IRB) received your protocol IRB #06-3919 entitled, "Hypertext Reading as Related to Research Strategies for University First-Year Composition Students." The IRB Chair reviewed the study on 3/27/2007 and did not have any concerns with the proposed project. The Chair has indicated that under federal regulations (Category #1, research conducted in established or commonly accepted educational settings, involving normal educational practices, such as research on regular and special education instructional strategies) this research is **exempt** from further review by our IRB, so an approval is not applicable and a renewal within one year is not required.

Please accept our best wishes for the success of your endeavors. Should you have any questions, please do not hesitate to call me at 407-823-2901.

Cordially,

A handwritten signature in black ink that reads "Joanne Muratori".

Joanne Muratori
(FWA00000351 Exp. 5/13/07, IRB00001138)

Copies: IRB File
Susan W. Thompson
David Segal, Ph.D.

JM:jt



THE UNIVERSITY OF CENTRAL FLORIDA
INSTITUTIONAL REVIEW BOARD (IRB)

IRB Committee Approval Form

#06-3919

PRINCIPAL INVESTIGATOR(S): Kathleen Bell, Ph.D.

PROJECT TITLE: Hypertext Reading as Related to Research Strategies for University First-Year Composition Students

- New project submission
- Continuing review of lapsed project # _____
- Study expires
- Initial submission was approved by full board review but continuing review can be expedited
- Suspension of enrollment email sent to PI, entered on spreadsheet, administration notified _____
- Resubmission of lapsed project # _____
- Continuing review of # _____
- Initial submission was approved by expedited review

Chair

IRB Reviewers:

Expedited Approval

Dated: _____
Cite how qualifies for expedited review: minimal risk and _____

Signed: _____
Dr. Tracy Dietz, Chair

Exempt

Dated: 3/27/07
Cite how qualifies for exempt status: minimal risk and #/ _____

Signed: _____
Dr. Craig Van Slyke, Vice-Chair

Dr. Sophia Dzieglewski, Vice-Chair

Expiration

Date: _____

- Complete reverse side of expedited or exempt form*
- SPDX Waiver of documentation of consent approved
- Waiver of consent approved
- Waiver of HIPAA Authorization approved

NOTES FROM IRB CHAIR (IF APPLICABLE): First Review classifications needed. Sophia Dzieglewski 11/1/2006

further classifications resolved. Approved Exempt on 11/1/07

3/26/07 Training requirements met. met



UCF IRB Protocol Submission Form

Initial Resubmission of IRB # 06-3819

See original for signatures



Please type this form using the Microsoft Word document. Expand as needed. Allow a minimum of 2-3 weeks for the approval process. A letter of approval will be mailed to you once approved. Information on this form must match information on the grant application, dissertation or thesis, consent forms or letters, and flyers for recruitment. There are no deadlines for submission of minimal risk studies as they are reviewed at least weekly. If it is deemed by the IRB that the study involves greater than minimal risk or elevating factors, the complete IRB packet must be submitted by the 1st business day of the month for consideration at that monthly IRB meeting. At title note if investigator is Student, Master's Candidate or Doctoral Candidate.

1. Title of Protocol: Hypertext Reading as Related to Research Strategies for University First-Year Composition Students (Investigator is MA Candidate, Department of English)

2. Principal Investigator: -[List the faculty supervisor as both the Principal Investigator and the faculty supervisor if student(s) or staff members are doing the research. List student(s) as co-investigator(s).]

Signature: _____

Department:	English	College:	Arts & Sciences
Name:	Kathleen Bell	E-Mail:	kbell@mail.ucf.edu
Mr./Ms./Mrs./Dr. (choose one)	Dr.	Telephone:	407.823.2286
Employee ID or Student PID #:		Facsimile:	407.823.6582
Degree:	PhD	Home Telephone:	
Title:	Associate Professor		

Co-Investigator(s):

Signature: _____

Name:	Susan W. Thompson
Mr./Ms./Mrs./Dr. (choose one)	Ms.
Employee ID or Student PID #:	s1344828
Degree:	MA (candidate)
Title:	Rhetoric & Composition
Department:	English
College:	Arts & Sciences
E-Mail:	s3wile@coastalnow.net
Telephone:	912.507.7791
Facsimile:	912.236.1049
Home Telephone:	912.884.6520
Work Telephone:	912.236.8394

Signature: _____

Name:	
Mr./Ms./Mrs./Dr. (choose one)	
Employee ID or Student PID #:	
Degree:	
Title:	
Department:	
College:	
E-Mail:	
Telephone:	
Facsimile:	

Signature: _____

Name:	David M. Segal
Mr./Ms./Mrs./Dr. (choose one)	Dr.
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E-Mail:	dsegal@mail.ucf.edu
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Name:	
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Employee ID or Student PID #:	
Degree:	
Title:	
Department:	
College:	
E-Mail:	
Telephone:	
Facsimile:	
Home Telephone:	

3. Supervisor:

Signature: _____



Name: Kathleen Bell, PhD; Office phone: 407.823.2286, kbell@mail.ucf.edu

4. Collaborating institution(s) and researcher(s) This project, titled "Hypertext Reading as Related to Research Strategies for University First-Year Composition Students," will be conducted at the University of Central Florida, College of Arts & Sciences, Department of English. The principle investigator is Susan Thompson, MA Candidate, Department of English), The faculty advisor is Kathleen Bell, PhD. Other project advisors are Karla Kitalong, PhD, Rudy McDaniel, PhD, and David Segal, PhD.

5. Dates of proposed project (cannot be retroactive) From: January 22, 2007 To: February 16, 2007

6. Source of funding for the project (project title, agency, account/proposal # or "Unfunded"): na

7. Scientific purpose of the investigation is to collect data regarding technology-related research strategies and its influence on student literacy, specifically as applied to an assignment to research and develop an argument for a composition class essay assignment.

8. Describe the research methodology in non-technical language The research project involves data collection resulting from students' readings of an assigned hypertext document. The project includes a survey of the individual student's technological abilities as perceived by the student, a reading assignment, and a follow-up questionnaire. All components of the project will be made available on a web page. The students will be given this assignment in a classroom setting with a time limit of one class period in which to complete all activities. The student's online activities will be tracked electronically and used in addition to their responses to the two questionnaires (technology survey and post-reading questionnaire) as data components for analysis for completion of a thesis paper. There is no requirement for students to reveal their names, student identification numbers or any other unique identifier.

9. Describe the potential benefits and anticipated risks and the steps that will be taken to minimize risks and protect participants There are no risks to the research participants associated with this activity. Benefits include identification of technology-related research strategies and its influence on student literacy. This information has the potential to influence pedagogical practices.

10. Describe how participants will be recruited, how many you hope to recruit, the age of participants, and proposed compensation (if any). 40-60 prospective research participants, 18 years of age or older and currently enrolled in ENC1102 English Composition courses at UCF, will participate during one regularly scheduled class period. This will be accomplished with the permission and cooperation of the instructor. Post-activity follow-up with the research participants is not anticipated.

11. Describe the informed consent process This project is an anonymous study in which participants are not required to reveal their names; however, an Informed Consent form will be distributed to each participant that explains the project and serves as an acknowledgement of the participant's willingness to participate. Participants retain a copy of the form.

12. Describe any protected health information (PHI) you plan to obtain from a HIPAA-covered medical facility or UCF designated HIPAA component No protected health information is required from any research participant for this project.

I approve this protocol for submission to the UCF IRB. Signature: _____ /

Department Chair/Director Date

Cooperating Department (if more than one Dept. involved): _____ /

Department Chair/Director Date

Note: If required signatures are missing, the form will be returned to the PI unprocessed.



Informed Consent to Participate

"Research on Hypertext Reading and Research Strategies"

A research project titled "Hypertext Reading and Research Strategies" is being conducted on students' advances in technological literacy by Susan W. Thompson, MA candidate in the Department of English. The purpose of the study is to facilitate the development of composition pedagogy (teaching strategies) for first year composition studies in response to the findings of the research. Findings will be evaluated and considered as part of a thesis research project and paper that, if published, will not contain any names or other information that can be used to identify the research participants in the reporting. Faculty supervision for this project is provided by Dr. Kathleen Bell. Contact information for Ms. Thompson and Dr. Bell are provided at the end of this form.

You must be 18 years of age or older to participate in this research project. You will receive no compensation for your participation. You are being asked to take part in this study that includes completion of a questionnaire titled "Technology Survey" and a Research Activity during which you will be asked to navigate to a specified Internet location, read an article and then complete a questionnaire in response to your reading. You will spend one regularly scheduled class period performing this project and receive class participation credit from your instructor toward your portfolio grade.

Your responses will be analyzed and reported anonymously in aggregate form to protect your privacy; however, you may omit any items on the questionnaire(s) you prefer not to answer. Participation in this project does not require disclosure of your name. Access to the research project web page is limited to only the researchers and programmer. Participation in this project may benefit you by helping you identify ways electronic documents and technology can be used as tools for research. There are no risks associated with participation in this study.

You may contact the research team with any questions or comments via telephone or email.

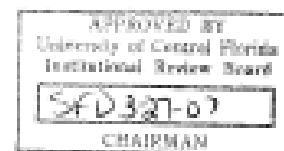
Principal Investigator/Faculty Advisor

Kathleen L. Bell, PhD
UCF Department of English
Telephone 407.823.2286
Email kbell@mail.ucf.edu

Co-Investigator

Ms. Susan W. Thompson
MA Candidate, UCF Department of English
Telephone 912.507.7791
Email sjwile@coastalnow.net

The University of Central Florida is an agency of the State of Florida for purposes of sovereign immunity and the university's and the state's liability for personal injury or property damage is extremely limited under Florida law. Accordingly, the university's and the state's ability to compensate you for any personal injury or property damage suffered during this research project is very limited.





Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (IRB). Questions or concerns about research participants' rights may be directed to:

Institutional Review Board Office at the University of Central Florida
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, FL 32826-3246
Telephone numbers: 407.823.2901 or 407.882.2276

If you agree to voluntarily participate in this research project as described, please retain a copy of this form for your reference.

Thank you for participating in this research.

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