

ONLINE TEACHING AND FACULTY LEARNING:
THE ROLE OF HYPERMEDIA IN ONLINE COURSE DESIGN

By

Jessica Lucille Knott

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

Higher, Adult and Lifelong Education – Doctor of Philosophy

2015

ABSTRACT

ONLINE TEACHING AND FACULTY LEARNING: THE ROLE OF HYPERMEDIA IN ONLINE COURSE DESIGN

By

Jessica Lucille Knott

Using semi-structured interviews, this study set out to explore how faculty experiences in reading, teaching, and technology inform their use of hyperlinks and hypermedia in online teaching, learning, and course design. Further, an exploration of how faculty learn new technologies as they develop their online courses serves as a lens through which to view course design and its evolution. Study findings reveal that the use of hypermedia in online course design reflects the reading preferences and practices of the faculty developing the course. Further, findings indicate that, even when formal faculty development programs are offered, faculty learning is extremely fluid, with heavy reliance upon the resources they can find easily and immediately as a means of learning new things. New teaching philosophies were rarely adopted, but new course structure elements and technologies were adopted if the faculty felt they would assist in the content delivery process. As a result, recommendations include the development of just-in-time resources for faculty, and the development of faculty development programs that allow for individualized assistance and transfer.

ACKNOWLEDGEMENTS

This study would not have happened without the support and experience of my advisor and committee chair, Dr. Steven Weiland. His patience in pushing me to improve my writing and scholarship, coupled with his high expectations for my work, is the reason I was able to complete not only this work, but this program, and many of my professional achievements. Thank you, Dr. Weiland.

I also wish to thank my guidance committee, whose dedication, feedback, and discussion helped me see the things I had missed, and think about others in completely different ways. Your perspectives and support were invaluable, as was your willingness to laugh from time to time.

I can never thank my husband enough for his support not only during the dissertation process, but throughout the entire PhD program. He encourages me to be who I am, even in an academic career, and helps make sure that I have the resources I need to do so. His love, patience, and sense of humor are the biggest reason I love what I do, as he helps me work because I enjoy it, not because I have something to prove. Thank you.

Finally, everyone needs friends who can help carry them through life's challenges. Thank you to Drs. Laura Pasquini, Tanya Joosten, and Leigh Wolf for the academic advice and laughter, to Terri Gustafson for being the best cohort-mate a girl could ever have, and to the Phoenix Force, my own personal "immortal and mutable manifestation of the prime universal force of life and passion." Thank you all for keeping me sane. Relatively.

TABLE OF CONTENTS

LIST OF FIGURES.....	vi
Chapter 1: Introduction	1
The Demand for Online Learning.....	2
Teaching and Learning in the Digital Age.....	6
Why Hyperlinks?	10
Faculty Learning.....	16
Methods.....	25
Sample.....	25
Instrumentation.....	27
Coding.....	29
Researcher Role	30
Summary.....	31
Chapter 2: Anna - From Learning with Hypermedia to Teaching with Hypermedia	33
Introduction.....	33
A Personal History of Reading and Hyperlink Consumption	33
Teaching and Learning with Hyperlinks and Hypermedia	35
Learning to Teach Online	39
Teaching, Learning, and Assessment of Hyperlinks.....	43
Perceptions of Student Interactions and Effectiveness.....	47
Chapter 3: John - Hyperlinks As Portfolios.....	52
Introduction.....	52
A Personal History of Reading and Hyperlink Consumption	54
Teaching and Learning with Hyperlinks and Hypermedia	57
Learning to Teach Online	60
Teaching, Learning, and Assessment of Hyperlinks.....	64
Perceptions of Student Interactions and Effectiveness.....	68
Chapter 4: Thomas - Hypermedia as Self-Created Content Delivery	71
Introduction.....	71
A Personal History of Reading and Hyperlink Consumption	71
Teaching and Learning with Hyperlinks and Hypermedia	76
Learning to Teach Online	85
Teaching, Learning, and Assessment of Hyperlinks.....	89
Perceptions of Student Interactions and Effectiveness.....	91
Chapter 5: Mary - Hypermedia for Student Comfort.....	94
Introduction.....	94
A Personal History of Reading and Hyperlink Consumption	94
Teaching and Learning with Hyperlinks and Hypermedia	97
Learning to Teach Online	99
Teaching, Learning, and Assessment of Hyperlinks.....	105

Perceptions of Student Interactions and Effectiveness.....	113
Chapter 6: Sue - Hypermedia as a Problematic Necessity	119
Introduction.....	119
A Personal History of Reading and Hyperlink Consumption	119
Teaching and Learning with Hyperlinks and Hypermedia	122
Learning to Teach Online	123
Teaching, Learning, and Assessment of Hyperlinks.....	128
Perceptions of Student Interactions and Effectiveness.....	135
Chapter 7: Findings and Conclusion	139
Findings.....	139
Question 1.	139
Question 2.	139
Question 3.	140
Question 4.	140
Limitations and Directions for Future Research	146
APPENDIX.....	148
BIBLIOGRAPHY	157

LIST OF FIGURES

Figure 1. Inline hyperlinks.....	44
Figure 2. Hypermedia course content	45
Figure 3. Hyperlinked gallery of student work.....	66
Figure 4. Course structure.....	77
Figure 5. Hyperlink use in blog posts	78
Figure 6. Hypermedia content.....	90
Figure 7. Accessible hypertext course content 1	111
Figure 8. Accessible hypertext course content 2	111
Figure 9. Non-clickable hyperlink	112
Figure 10. Plain text course content.....	131
Figure 11. Hypermedia in dropbox instructions	132
Figure 12. Learning management system hyperlink difficulties	133

Chapter 1: Introduction

We live in a time of rapid technological change. Internet service is fast and widely available, mobile phones are obsolete before their two-year service contracts have expired, news media outlets are moving away from traditionally printed newspapers and magazines toward online multimedia experiences, and more students are learning in virtual classrooms than ever before.

One component of daily life for most Americans that been conventionally tied to both the acts of reading and of learning is the daily news. News media have not been immune to changes brought about by the advent of the Web; indeed they may serve as an example of new kinds of reading. For example, *The New York Times* is one of the most respected publications in the world. The newspaper traditionally so text-heavy it was once affectionately dubbed “The Grey Lady” now lives as much in the virtual world as the printed one. One online article on Ebola efforts in January of 2015, linked to 11 other articles and resources beyond the story it told. The Web version refers readers to the print version of the article, and the print version of the article refers readers to related resources on the Web. Thus, the role of the reporter is re-cast as someone who guides the reader to a larger hyperlinked view of the subject.

Faculty members at institutions of higher education are seeing their instructional roles recast in similar ways. They have opportunities, via hyperlinking, to extend the range of their teaching. They are asked to be Web guides, of a kind. In essence, faculty members are increasingly seen as content curators rather than only content creators, as is seen in the field of journalism.

This is a study of instructional uses of hypermedia, in the context of faculty learning and online course design. It features five chapter-length accounts, based on interviews of the experience of faculty members who teach online.

This introductory chapter begins with an account of growth in the demand for online learning. Next comes a look at teaching and learning in the digital age, including how technology has affected teaching practices and learning environments. Third, I discuss the nature of hyperlinks and their uses. Next, I consider work on faculty learning, including how technology has changed how faculty understand their roles. There follows a discussion of the methods used in this study. Finally, I briefly discuss my role as the researcher and the how my work as an instructional designer might reflect in this work, ending with a summary of where the field and community of educators stands today.

The Demand for Online Learning

In 2012, the long-time president and CEO of Educause (a prominent non-profit organization focused on technology in higher education) Diana Oblinger said, “We are no longer in the information age - we are in the connected age. Everyone and everything is interconnected.” (p. 4) With this connectedness has come increased demand from college students for a dilution of the lines between themselves and the physical campus: blended courses, the ability to access course content from their smartphones, and flexible online learning to name a few. The changing nature of education has fueled demand for online instruction, both in the form of fully online courses or blended learning (Oblinger, 2012, 2013).

From an institutional standpoint, experienced researcher and President Emeritus of both Princeton University and the Andrew W. Mellon Foundation, William Bowen (2013), notes that “far greater access to the Internet, improvements in Internet speed,

reductions in storage costs, the proliferation of increasingly sophisticated mobile devices, and other advances have combined with changing mindsets to suggest that online learning, in many of its manifestations, can lead to at least comparable learning outcomes relative to face-to-face instruction at lower cost” (p. 44). Frequent Chronicle of Higher Education contributor and author of *College (Un)Bound*, Jeff Selingo (2013), sees online education (especially of the open, or free variety) as having the potential to change the way institutions operate, including how they define academically “elite” students (p. 92). Most faculty, however, do not clearly see the future of online education at their institutions. 73% report that they don’t see a clear strategy in the online initiatives on their campus, and 78% are interested in bringing more technology into their teaching (Dahlstrom & Brooks, 2014).

Enrollment in online courses at institutions in the United States has not only grown rapidly, but that growth has remained relatively steady over the course of a decade. Approximately 41% of academic programs at public institutions reported steady online enrollment, with only around 5% reporting declines, and 54% reporting growth (Allen & Seaman, 2011¹). Further, in 2011, 69.1% of chief academic officers reported that online education was critical to the long-term strategy of their institutions, compared with 50% in 2006 (Allen & Seaman, 2013).

¹ Allen and Seaman, researchers for the Babson Survey Research Group (BSRG), have collaborated with the Sloan Consortium for over ten years to release yearly reports tracking online education in the United States. These reports have become important resources for researchers, administrators, and practitioners of higher education. In 2014, the Sloan Consortium became the Online Learning Consortium (OLC), a self-sustaining professional association focused on supporting eLearning professionals and academics in the delivery of quality online education. In 2011, OLC expanded the report-creation partnership to include sponsorships from outside vendors in an effort to maintain the independence of these reports.

There have been a number of studies about why students pursue online education (Allen & Seaman, 2010, 2011, 2013, 2014; Allen, Seaman, Lederman & Jaschik, 2012; Aslanian & Clinefelter, 2013; Coates, 2006; Larreamendy-Joerns & Leinhardt, 2006, Seaman, 2009), finding that flexibility, the desire for updated credentials in the pursuit of career goals, and the reputation of the institution offering the online course were the students' primary motivators. And, while recent studies show that explosive online growth may be flattening (Allen & Seaman, 2014), the demand for online education is still considerable and growing. In 2013, the number of students taking at least one online course numbered 7.1 million. For the past decade, online enrollment growth rates have far exceeded enrollment growth in traditional face-to-face college courses. The 9.3% growth rate found in a 2013 study by the Sloan Consortium was the lowest recorded growth rate in ten years of investigation until the 2014 report which saw enrollment grow by only 6.1% for the year (Allen & Seaman, 2013, 2014). While the growth rate has slowed, it is important to make this distinction: currently as of the 2014 report, more students than ever are enrolled in online courses, with "the proportion of higher education students taking at least one online course...33.5 percent" (Allen & Seaman, 2014, p.4).

It also becomes important to define what "online" means in the context of online courses. This study first refers to online courses as those that are delivered completely via the Web, whether they use synchronous or asynchronous components. Additionally, in the course of the interview process for the subjects of this study, faculty may refer to "blended," or "hybrid" courses². This study defines these courses as integrating

² Updated in September of 2014, the Online Learning Consortium (previously the Sloan Consortium) offers a widely-used standard by which institutions can classify how "online" and "blended," or "hybrid" courses are defined. Hybrid courses are defined as

technology as a means of replacing face-to-face instruction time, but for this research no ratios regarding the amount of face-to-face instruction compared to online instruction will be specified. Here, if any face-to-face time is regularly replaced with online instruction, the course will be defined as a blended or hybrid course. Finally, an “enhanced” course refers to a course that is, for all intents and purposes, a face-to-face course, but incorporates a heavy technology presence to enhance the course experience. For example, “flipped courses,” or “flipped lectures” refer to courses in which faculty members have replaced lectures in the classroom with pre-recorded video, saving the lecture time for in-person activities. In some contexts, these courses would be referred to as blended, but here they will be defined as enhanced, because no seat time is replaced.

Hyperlinks are widely, if inconsistently used in course design, and there is more that could be understood about how faculty members learn about teaching online courses at Carnegie classified doctoral institutions (Research I). For example, whether or not they think about their use of hypermedia, specifically hyperlinks, in course design. Hyperlinks can create opportunities for exploration (Burbules & Callister, 1996, 2000; Caulfield, 2011; DeMayer, 2011), but that they can also cause cognitive problems for students such as decreased attention span, increased distraction, difficulty with navigation of hypertext learning resources, and challenges with processing information from multiple sources (Amadiou & Marine, 2009; Cagnoz & Altun, 2012; DeSchryver & Spiro, 2009; DeStefano & LeFevre, 2007; Hardman and Edwards, 1989; Kim & Hirtle, 1995). They

courses in which “Online activity is mixed with classroom meetings replacing at least 20 percent, but not all required face-to-face-meetings (Mayadas & Miller, 2014).” Online courses are defined as courses where “all activity is done online; there are no required face-to-face sessions within the course and no requirements for on-campus activity (Mayadas & Miller, 2014).”

are at once lauded as important tools for teaching and learning (Burbules & Callister, 1996, 2000; Chen & Chen, 2011; Harasim, 1995, 2000, 2006), and criticized for creating a generation of Internet-reliant, shallow readers and learners (Baron, 2013; Carr, 2008, 2010; Haile, 2014).

The increased demand for online instruction has also placed heightened pressures on faculty to learn new skills (such as the incorporation of hypermedia into their course design), which often fall outside of their areas of expertise and experience. Yet, as online enrollment numbers increase, so does the student audience for the hypermedia used in the courses faculty teach. Just as the *New York Times* has begun incorporating hypermedia into the delivery of the daily news, so has higher education moved toward incorporation of hypermedia in the delivery of online courses. With each passing year, it becomes increasingly important for practitioners of higher education to understand the effects that technologies of the digital age have had on teaching and learning, even when the technology may seem simple or unimportant, like the hyperlink.

Teaching and Learning in the Digital Age

Online education is typically an exercise in reading and processing hypermedia. As an instructional designer in the field of higher education, I have worked with and been exposed to countless online courses, all of which rely on hypermedia and hypermedia creation and delivery systems as a means of delivering content to students at a distance. While video has seen growth as a teaching strategy in recent years, the current crop of learning management systems from which a majority of online courses are delivered (Edtechnica, 2014; Feldstein, 2014) still rely on hyperlinks and written descriptions to

contextualize video and visual content. Therefore, reading is a key component of online learning.

To navigate learning environments and access content, students must have the ability to read, navigate, and learn from links and written content, even if the primary learning materials they are attempting to find are visual or video-based. Reading, and the ability to parse written information efficiently enough to find not only the information needed to succeed in the course, but also the ways to click and navigate to additional content, is crucial for students learning online. This need introduces pedagogical implications for faculty, especially those teaching fully online courses.

Faculty members in the digital age, especially those teaching online, are expected to learn about the diverse factors inherent in using technology to teach. This means that they increasingly must know how to seek and incorporate technical knowledge into their work to succeed in an increasingly technological academy. As noted by Austin and Sorcinelli (2013) “as higher education institutions incorporate online and blended learning, even highly experienced faculty members, as well as those new to the profession, face new challenges, as well as fresh opportunities for their pedagogical practice; teaching online is not the same as teaching face-to-face (p. 87).” Faculty development programs provided by institutions can help, but remain a small piece of the overall faculty learning picture. In making the switch to online learning, faculty assume additional responsibilities, change their online personas, re-learn how to build relationships with their students, and learn to look at their content in more structured ways than their face-to-face classrooms (Major, 2010). Further, within the body of knowledge that must be pursued while online teaching, there falls a deceptively complex

technology most individuals interact with every day but often overlook. It has the potential to impact every aspect of the learning environment and process. It is the hyperlink.

The past 15 years have been tumultuous for the field of higher education. Technologies have surfaced, and just as quickly become obsolete. The facets of instruction in the traditional classroom have been transformed, and teaching strategies in classrooms have been changed by technology's ability to extend the physical space into the virtual world. The growth of the Internet has connected us to more people and resources than could have been imagined a few short years ago. Instruction has changed in the age of technology, and hyperlinks are prevalent. Instruction with hyperlinks has evolved from simply using them to create connections between individual resources, to using a web of hyperlinks to build interactive hypertext, to image-based links that were built into packages and CD-ROMS to facilitate interactivity with content, to the newer hypermedia environments that live in "the cloud" and are constantly accessible with an Internet connection.

In 2013, Bowen released *Higher Education in the Digital Age*, which offers an academically grounded account of how "advances in communications, and the development of networks and systems for managing text and exchanging perspectives with colleagues at a distance, have revolutionized the way papers are prepared and revised" (p. 8). The hyperlink has not exactly advanced technologically since the earliest days of the Internet, but this study shows that it has re-defined academic governance, digital learning and course design even in the current academic technology climate. Further, advances in the Internet and digital scholarship have changed faculty and

academic work as well as student work. Articles and databases are searchable, back issues of journals are more readily accessible and navigable, written instructional content can be easily created, published, and delivered using provided templates, and the sheer amount of accessible information (immediately and from anywhere) is more than could ever be consumed.

To understand the context within which this study is centered, here I provide a brief history of online teaching at Midwest University. Midwest University has offered online technology for teaching since 1992, when the first learning management system was deployed. In 1996, a department was established on campus to develop online learning tools, and help faculty convert their courses to an online format. In 1997, the College of Education offered one of the first fully online courses at the university, “The Concept of a Learning Society.”

The College of Education also offered the first degree-granting, fully online program at Midwest University. The program began in the year 2000, with pressure from the university president and a dean’s office initiative to provide laptops and funding to faculty electing to teach online as part of the newly-formed MA in Education program. Upon their agreement to teach online for the College of Education, faculty came together in a workshop that taught them about effective online teaching practices and campus technologies. According to faculty accounts, the first courses in this program went online in 2001. In 2007, Midwest offered 177 online course sections, with 6,828 student enrollments. In 2013, those numbers had increased to 623 online course sections, and 22,488 student enrollments.

Why Hyperlinks?

Since the advent of Web-based distance learning, the focus of online course design and faculty learning literature has been, in large part, dominated by research and conversation about community building and creating online presence. In other words, practitioners and academics have focused on how to best create the feeling that the virtual classroom is as socially connected as the face-to-face environment. Hypermedia, on the other hand, a key component of online course design and delivery, has been largely ignored. The hyperlink, defined as “a link from a hypertext file or document to another location or file, typically activated by clicking on a highlighted word or image on the screen” (Google, 2013), is one of the key ways that teaching in online environments is different from teaching face-to-face. Best practices books about online education tend to focus in two ways: broad pedagogical concepts, and technical implementation such as how to configure discussion forum settings for desired results, or mechanisms and tips for positioning course content (Barkley, 2010; Boettcher, 2010; Caulfield, 2011; Lehman & Conceicao, 2010; Pullman & Gu, 2009; Smith, 2008, Stavredes, 2011; Thorman & Zimmerman, 2012; Vai & Sosulski, 2011). Hyperlinks and hypermedia are rarely addressed, aside from technical documentation about how to create a hyperlink in the learning environment.

For the purposes of this study, I will often use the terms “hyperlink,” “hypertext,” and “hypermedia” in interchangeable ways. Historically, however, they were different. Hyperlinks often stood alone, and served as navigation components, or “a connection among documents” (Schlosser & Simonson, 2010). Hypertext was text built with hyperlinks throughout created with the intention of providing a dynamic reading

experience, or “a computer-based text and document retrieval system that can be accessed in a nonsequential or nonlinear format” (Schlosser & Simonson, 2010). Finally, hypermedia was hypertext built out to include interactive multimedia such as Web videos, audio files, and images that viewers could manipulate, or “a computer-based information retrieval system for accessing sound, text, images, graphics, or video” (Schlosser & Simonson, 2010). So, over time, and with the proliferation of electronic media formats like video, audio, and electronic images, the term “hypermedia” has become increasingly interchangeable with the words “hypertext,” and “multimedia” to refer text that incorporates elements of these new technologies. This evolving definition is important for online teaching and learning in that the act of learning online is still largely an exercise in reading. From articles to Web resources, to content created by instructors, online courses are navigated by reading, and most of the content delivered to students is written, in one form or another.

While much was added to the body of literature regarding the potential of hypermedia in education in the late 1990s and early 2000s, hypertext is rarely mentioned in resources published more recently than 2005. After 2005, work studying hypertext shifts toward its impacts on reading comprehension and retention, an important component of this study. Another important evolution to note in the discussion of hypermedia is the evolution from closed systems of media delivery to open systems such as the World Wide Web. Hypermedia originated in a time where CD-ROMS were the primary delivery mechanism for content. Thus, while hyperlinks were used, they linked only to other materials on the CD-ROM and not to the open Web. This type of interaction offers different implications for learning, as all of the content within a closed system is

related. A click on a closed hyperlink takes individuals to other closed resources, designed for a specific purpose. On the open Web, however, a link to a web page can result in clicks to other Web resources linked from that page, user comments, advertisements, and more.

Burbules and Callister (1996) see hypertext as “a kind of informational environment in which ideas are linked to one another in multiple ways... a system for organizing information, just as a library card catalogue or a Rolodex file are systems for organizing information” (p. 24). Here, I again refer to Google’s definition of hypertext as “a software system that links topics on the screen to related information and graphics, which are typically accessed by a point-and-click method.” The building block of hypertext, hyperlinks create “a link from a hypertext file or document to another location or file, typically activated by clicking on a highlighted word or image on the screen (Google, 2013).” Another way, Schlosser and Simonson (2009) define the hyperlink as “a connection among documents in a hypermedia or hypertext format” (p. 154).

In a face-to-face classroom, potential connections and distractions are everywhere. They differ, however, in a virtual classroom where instructors may not be able to intervene in a timely manner. Depending on their implementation, hyperlinks can at once open doors to new knowledge and derail topical focus. In a course design structure, hyperlinks can provide a clickable path for students to find their way methodically through a course space, or can lead them into places they did not expect, leaving them unsure what to do next. In a face-to-face environment, especially in smaller and medium sized courses, the faculty can often see the need for remediation as distraction or confusion occur, and address it immediately. Online, these problems can be

largely invisible, harder to diagnose, and often require students to ask for help, which they may never do, or do only after they have exhausted their cognitive capacities in trying to find a solution themselves. While the hyperlink is essential to online instruction even when viewed at its most basic function as a means of navigation from place to place, understanding how reading, way finding and discourse in online course design can be affected is crucial. Hyperlinks can enhance text and information gathering, but depending on the role they play in course design, they can also result in feelings of disorientation, affecting reading comprehension.

The hyperlink is often referred to as the building block of the Internet. Hyperlinks are defined by the Oxford English Dictionary as “a piece of text...which, when selected or clicked onscreen, causes another related object (esp. a file or program) to be displayed or activated” (OED, 2013). Technology innovation in education has presented new opportunities, but at a cost to faculty that must not be overlooked. In 1939, Vannevar Bush had his initial visions of the memex, short for “memory extender,” a forerunner of the World Wide Web and the modern Internet. “Consider a future device for individual use, which is a sort of mechanized private file and library...A memex is a device in which an individual stores all his books, records, and communications, and which is mechanized so that it may be consulted with exceeding speed and flexibility” (p. 111) wrote Bush in “As We May Think,” published in 1945. “It consists of a desk, and while it can presumably be operated from a distance, it is primarily the piece of furniture at which he works. On the top are slanting translucent screens, on which material can be projected for convenient reading. There is a keyboard, and sets of buttons and levers. Otherwise it looks like an ordinary desk” (p. 112). This description of the memex vision conjures

images of the modern, Internet-enabled desktop computer, and served as a foundational idea that served Tim Berners-Lee as he worked to invent the World Wide Web and, ultimately, the Internet (Burbules, 2000; Easley & Kleinberg, 2012).

Theodore Nelson forged the term “hypertext” in 1967, visualizing text with clickable branches that readers could explore in the order of their choice (Fekete, 2013). In 1996, and again in 2000, Nicholas Burbules and Thomas Callister saw the dynamic promise this hypertext branching brought to the field of education. They saw speed and choice, and with them the potential for instantaneous discovery. They also saw, however, the importance of the context in which all technologies (including hyperlinks) were used, saying “The technology, then, is not just the thing but the thing and the patterns of use to which it is put, the ways people think about and talk about the thing, and the changing expectations and problems the thing introduces” (2000, p. 7). The hyperlink is not only the most basic building block of the Web, but also a reflection of the pedagogical and technological tensions between distraction and exploration. Clicks can take learners anywhere, including places they did not intend to go, potentially creating adverse effects on student learning.

As an object the link seems simple, and certainly not cutting edge. The idea is that a reader sees text, clicks it, and resumes reading. However, as an epistemological and pedagogical tool, its implications reach far beyond the simple click, especially for faculty members delivering content online. In the world of higher education, and faculty development offerings, it is possible to lose sight of the fact that faculty members teaching online are largely, at their core, people who are learning to do new things, using new technologies. To some, though hyperlinks have existed since the advent of the World

Wide Web, this feature of online reading and writing is new, especially as a teaching tool.

They may not understand or consider the implications introduced when reading or

navigation flow is disrupted by the choice (or requirement) to click on a hyperlink.

Perhaps this is because they have not been taught, or had time to seek out, whether or not

they should do so. Thus, the primary research questions I attempt to answer are:

- How do faculty members' professional histories, primarily their experiences in reading (including the now often-recognized competition between print and screen) and writing shape their online teaching practices, particularly in their use of hypermedia?
- What new forms of faculty learning are important in how they prepare to teach online?
- What significance do they find in the role of hypermedia, and how do they use it in online course design?
- How do faculty members understand the instructional uses of hypermedia in relation to the technologically influenced emerging abilities and interests of students?

These questions and their answers are crucial, as online course offerings continue to see high enrollments and increased technological complexity. Understanding hypermedia use matters, but perhaps even more so, understanding the impacts and implications of faculty learning practices matters if teaching, learning, and research is to be effectively supported in the field of higher education³.

³ This study focuses on teaching and learning, but mentions research here as recognition that research is a key element of the faculty career and heavily utilizes linked resources. The research aspects of faculty work are often not isolated from teaching and learning.

Faculty Learning

This section focuses on the broad topic of faculty learning. That is, not simply institutional faculty development, but also faculty experiences, as well as self-directed and organized learning opportunities. Understanding the experiences that lead faculty to make instructional choices about integrating hyperlinks and hypermedia into their online course designs can offer insight into practices and interactions, ways that can and perhaps should be replicated, ways that might be better to avoid for the purposes of student learning. This understanding can also help us better discover how the faculty in question learned about these methods, how they came to see them as something that would be effective if incorporated, and shed some light on the kinds of learning experiences that faculty find most enriching. This data could begin to paint a picture for not only what good online course design for distance teaching and learning is, and what it could be, but offer implications for improving the faculty learning and development opportunities offered on campuses as well.

In what follows, I begin with a look at faculty learning, then move to an exploration of where the thoughts and perceived value of faculty learning, specifically faculty development in instructional technology have been, then progress to an updated snapshot of where these values surrounding faculty learning are now, and finally wrap up with some research that considers how learning opportunities might be changing. While the literature on faculty learning often centers on the more commonly known term “faculty development,” this study focuses more broadly on faculty learning and how individuals configure it to fit their needs.

Neumann (2009) finds that “although central to their work and careers, professors' scholarly learning is a ‘black box’ in the public's understanding of what it means to be a

professor and to engage in academic work" (p.2). Common perceptions of the faculty career from outside of the academy center on teaching and research, while faculty learning is frequently excluded from view. This study looks at faculty learning from the perspective of how they decide to incorporate new technologies and how they learn enough to do so, including graduate education, professional learning networks, books, consulting services they have engaged, and the informal learning experiences they bring to their practice.

When it comes to the literature based in learning to teach online, Neumann (2009) highlights the critical nature of faculty learning as preparation for the job, and everything that “comes at them” (p. 5). Baran, Correia and Thompson (2011) did an extensive literature review focusing on the changing faculty role in online teaching, and the pedagogical and technical competencies that accompany an online course. Online instructors undertake many roles in the virtual classroom, ranging from manager, instructional designer, teacher, tech support, facilitator (Baran, Correia & Thompson, 2011, p. 433). These studies illustrate just how many new things “come at [faculty]” as they learn what is involved in online instruction.

Major (2010) found that fundamental shifts in self-identity take place when instructors begin teaching online, and that the professional development that takes place incorporates more than technical know-how. Through an extensive literature review, Major found that faculty “change public presentation of selves, often becoming more reserved online” (p. 2169), “feel professional rejuvenation from teaching online” (p. 2172), “increase structure in online courses” (p. 2175), “assume additional responsibilities” (p. 2180), and “feel increased demands” (p. 2180), and “reconstruct

relationships with their students” (p. 2181), when teaching online. Baron (2013) echoes the change in faculty role online, and highlights that faculty must learn to be facilitators more than experts, and to increase the structure and organization of their course content.

As academic work changes, and technology becomes more and more necessary, the preparations needed are rapidly changing (Coppola, Hiltz & Rotter, 2002; Gornall & Salisbury, 2012; McShane, 2004). While they are interested in extending their subject matter knowledge across the span of their career, faculty must also reach beyond disciplinary borders to recontextualize content and engage in a different kind of learning in order to be successful with technology (Neumann, 2009). Technology integration, especially in fully online courses, requires broad re-thinking of academic work. Workflows, teaching philosophies, and sometimes even the subject matter itself must be considered from the perspective of how technology will impact course dynamics and processes.

Faculty must be excellent learners in order to also be excellent teachers and researchers (Neumann, 2009; O’Meara, Terosky, & Neumann, 2008; O’Meara & Terosky, 2010). However, Gayle, et al. (2013) note that “surprisingly little is understood about what theoretical frameworks are most effective in explaining the way faculty members learn about or incorporate their knowledge of scholarly teaching into their cognitive schema” (p.81). The same can be said for how faculty members learn about or incorporate their knowledge of teaching with technology. While there are best practices in online teaching and learning, no single online teaching method or pedagogy has emerged as a common standard to be followed (Baran, Correia & Thompson, 2013; Levine & Sun, 2002). Faculty are hesitant to move away from their known methods, and

try new ones, and little of what they learn in professional development workshops ever makes it into practice (Gayle et al., 2013; Tabata & Johnsrud, 2008; Yelon et al., 2004). There may be interest in trying a few new things in conjunction with previously adopted methods, but for true change to take place, faculty members in professional development needed to have motivation to make changes to their teaching methods specifically for the purposes of increasing their knowledge of, and improvement upon, their own technique (Gayle, et al., 2013).

As adult learners, faculty members engage in the learning process in a fluid way, incorporating what they learn to their prior knowledge. Opportunities for self-direction and collaboration are important to their success, as well as activities that work toward the end goal of improvements to their practice (Gayle et al., 2008; Harasim, 1995; Sorcinelli, 2006; Tabata & Johnsrud, 2008).

One of the most common ways that faculty members on modern university campuses seek learning and skill development is through faculty development offerings. As technologies have advanced, the problem of faculty learning has become more acute. As early as 1976, 66% of survey participants in a well-known faculty study by John Centra noted that faculty found that bringing experts in to help them incorporate audiovisual components into their teaching was “effective or very effective” (1976, p. 21). Baldwin, (1998) found evidence that, despite claims of technology as a catalyst for instructional change, e-mail and word processing were actually the most commonly used applications, not tools of teaching and learning. In 2014, this is still largely true (Allen & Seaman, 2012, 2013; Jaschick & Lederman, 2013). While the faculty roles have changed, as have the technical methods of sending and receiving communication, instruction itself

has remained largely unchanged. However, the beginnings of true concern about faculty teaching and expertise in the face of rapid technology innovation begin to emerge as the body of literature calls for faculty members to become less “sage[s] on the stage” and more “guide[s] on the side” in their approach (Baldwin, 1998, p.10; Barr & Tagg, 1995).

Much of the early push for connected, student-centered learning was a result of the establishment of the *Anytime, Anyplace Learning Program* by the Alfred P. Sloan Foundation, which lasted from 1992 to 2012 and provided over \$72 million to institutions wishing to expand their online learning initiatives (Picciano, 2012). From this program, the Sloan Consortium (Sloan-C) was formed, initially by grant-receiving institutions, and eventually as an incorporated 501(c)(3) professional development organization (Picciano, 2012). Much focus was placed in Sloan-C’s efforts around creating interactive online environments for students and faculty alike. Faculty were encouraged to form or join communities of virtual knowledge sharing called Asynchronous Learning Networks. Great importance was placed on the facilitation of these social and learning connections in the online environment in the years before social media and learning management systems were considered the norm (Picciano, 2002; Swan, 2004; Picciano, 2012), while other aspects of course design such as hypertext were less visible. This focus on connection, along with the evolution of Internet technologies and the World Wide Web, the influence of Alfred P. Sloan Foundation grants, and the work of Sloan-C changed how the field of higher education defined quality in online courses and course design.

In 2001, the Professional and Organizational Development (POD) Network conducted a study that placed technology and teaching integration into the top three concerns faculty had about their development (Sorcinelli, 2006; McKee, 2013). An

unpublished study about faculty development activities by McKee et al. in 2010 did not ask about technology, but researchers found that participants “repeatedly mentioned in the open response section of the research that they used technology to enhance pedagogy” (McKee, 2013, p. 20).

Today, and as technology has advanced, however, faculty development activities have remained relatively consistent. Sabbatical leave, grants, workshops, professional memberships, and seminars are all standard offerings on campuses providing faculty learning opportunities (Austin & Sorcinelli, 2013; Centra, 1976; McKee, 2013; Sorcinelli, 2006), though in 1976 the leave was often unpaid while currently compensation for time is regularly considered a benefit granted to those faculty who seek out development opportunities. Sorcinelli’s 2001 survey found that many faculty members seeking development (72%) were interested in “creating or sustaining a culture of teaching excellence,” while a lower, but still significant number (49%) were interested in “advancing new initiatives in teaching and learning” (2006, p. 48). Tabata and Johnsrud (2008) found that faculty members were more likely to incorporate technologies when they can do so in ways they find relevant and meaningful to their work. “It would seem that the more they view technology as beneficial in fulfilling their professional duties, the more likely they are to engage in other uses of technology, such as those associated with delivering distance education” (p. 635). Further, this study found that faculty members who feel confident using technology tend to view competency through the lens of work completion. In other words, they feel the most competent in the use of technologies that require the least variation in the ways they already teach or work. For example, a recorded lecture that they post for their students might require very little

deviation from their already comfortable approach to content delivery, thus responses regarding comfort with that technology and its integration into their teaching practices would tend to be higher as they perceive they would have to learn less to deploy it successfully. It seems that, despite the challenges, technology has the potential to advance the teaching and learning goals of faculty, perhaps helping to explain its topical prevalence in faculty development surveys.

A 2013 survey conducted by Gallup ® and *Inside Higher Education* surveyed higher education faculty and technology officers about their attitudes in regard to technology and online teaching and learning. Only 3% of instructors overall responded that lack of training opportunities was a factor (Jaschik & Lederman, 2013) in their hesitations regarding online learning. A 2014 report from the Educause Center for Analysis and Research found that 80% of faculty have access to IT training resources, and 59% of the faculty surveyed agreed or strongly agreed that they could be more effective teachers if they were better informed about how to incorporate technology into their courses (Dahlstrom & Brooks, 2014, p. 23). Dahlstrom and Brooks also explored the types of training faculty were interested in. “Faculty with less than 10 years of experience desire training for each of the top 4 technologies (free web content, online collaboration tools, LMS, and simulations/educational games) more than faculty with 10 or more years of experience. Part-time faculty were also more likely to report training needs for each of the top four items” (Dahlstrom & Brooks, 2014, p. 24).

98% of institutions offer individual technology training for their faculty (Dahlstrom & Brooks, 2014, p. 25)⁴. So, training is offered, but faculty either do not seek it or do not find that it fits their needs. Also, if they do not wish to teach online, providing training for them does not generally change their mind. This is important in that, in looking at hypermedia in online course design, practitioners must consider how faculty came to teach online and their attitudes about it as an influencing factor in how they think about their online course spaces.

Aside from the standard faculty development format that includes seminars, sabbaticals, and professional organization memberships, faculty members are looking to other resources in the pursuit of online teaching knowledge. In the *Inside Higher Education* survey, questions were asked about faculty members' experiences with online learning, with 29% of faculty overall reporting they had taken an online course for credit, compared to 50% of technology officers. Of the faculty having reported taking an online course, tenured faculty represent 19% to non-tenured faculty's 36%. Further, these numbers were different for faculty teaching online courses, with 49% of overall faculty reporting having taken an online course for credit (Jaschik & Lederman, 2013).

In many cases, faculty members teach in the way they experienced higher education themselves (Conceicao, 2006; Gallant, 2000), or try to replicate face-to-face teaching methods online (Bowen, 2013). In other words, they incorporate the methods

⁴ At Midwest University, faculty teaching for-credit courses can seek learning opportunities in a number of places, including a central university department of faculty development. Online instructors, or those who choose to incorporate technology into their teaching can also attend sessions delivered by the centrally-supported IT Services department. Finally, department technology coordinators are active on Midwest's campus, often creating discipline-specific workshops and resources for department faculty.

and behaviors they observed in their professors, keeping and re-using the ones they found most effective. For the minority who have taken online courses, this could mean modeling online course design and communication techniques, but the majority of faculty teaching online are likely relying on face-to-face instructional techniques and what they can learn in faculty development courses, or on their own.

Additionally, faculty members are increasingly self-organizing to obtain the training they perceive as useful. The rise of the Internet, and networked information and people also saw the rise of Professional Learning Networks, or PLNs, which have become an increasingly popular way for educators to share ideas, resources, and knowledge (Harasim, 1995). In higher education, Faculty Learning Communities (FLC), have also gained in popularity as a means for faculty members to collaborate, share ideas, and learn from one another in a self-directed way. Gayle et al. (2013) found that, overall, faculty members seek formalized faculty development opportunities as a means to: “(a) interact, exchange, explore ideas about teaching and learning with colleagues; (b) increase repertoires of instructional theory and practice; and (c) experience and contribute to a sense of community” (p. 87). Each of these variables is present in FLCs, which are organized and directed by the faculty themselves.

So, where is faculty development going, in the face of rapid technological change, how faculty members learn, and demand for skills in teaching and technology integration? Austin and Sorcinelli (2013) predict that faculty development will evolve to incorporate the flexibility needed for, and offered by, teaching with online technologies. Additionally, they see the potential for growth in faculty development offerings that support technology in research as well as teaching. Others see promise in more localized,

or department-based faculty development offerings, as opposed to broader institutional programs (Kukulska-Hulme, 2012). Still others see the creation of communities of practice focused on technology, or faculty learning communities, as the answer to facilitating a growth in comfort regarding the unknowns that technology introduces to the faculty role (Cook & Steinert, 2013; Hagler, et al., 2013). Demand for technology in teaching and learning will not subside in the near future. The more practitioners and scholars understand how faculty members learn the technology skills they use in online teaching, Internet use, and reading, the more guidance in the adoption of emerging technologies and pedagogical strategies, and improvement in online teaching efficacy can be offered.

Methods

This is a study in classic grounded theory (CGT). I selected grounded theory for this work as a systematic way to account for what could be learned from five distinct accounts of experiences and history with hypermedia hyperlinks and hypermedia. Kathy Charmaz, a foremost scholar in grounded theory, highlights how grounded theory methods allow a researcher to (as cited in Smith, 2007), “begin to construct [an] analysis by comparing bits of data – ideas and incidents – with each other” (p. 82). I do this by relaying faculty members’ personal experiences with online teaching and learning with an eye toward better understanding their approach to online course design, and how they came to learn what they know.

Sample. The 2010 Sage Handbook of Grounded Theory notes the necessity of obtaining the appropriate sample participants in studies situated in grounded theory. Originally, the sample for this study was intended to be drawn from the entire faculty

population of Midwest University. However, I decided upon input from my guidance committee to focus on a single unit, in this case the College of Education. The College of Education faculty represent diverse backgrounds, disciplines, and teaching experiences. While the decision to focus on a single department sacrificed interdisciplinary variety, it allowed for me to account for the impacts of departmental culture in a more reliable way.

“An excellent participant for grounded theory is one who has been through, or observed, the experience under investigation” (Bryant & Charmaz, 2010, p. 231). Further, she says that participants “must be willing to participate, and have the time to share the necessary information; and they must be reflective, willing, and able to speak articulately about the experience” (Bryant & Charmaz, 2010, p. 231). After deciding to focus on the College of Education, individual faculty were selected. They were identified through not only their involvement in the online teaching initiatives in the College of Education at Midwest University, but through recommendations from other faculty members in the department. Each faculty member was asked a question: “Do you make use of hyperlinking in your courses apart from simply linking to the required readings/articles?” Those indicating they did not were removed from the pool of potential interviews. This reduced the viable sample, and allowed for coding of considerations such as teaching experience, discipline, gender, age, and tenure status to be considered in the final selection process to ensure representation. Each chapter describes participants in detail, but demographically this sample was represented by three females and two males, ranging in age from mid-30s to mid-60s. Four of the interview subjects were tenure track faculty, while one was fixed-term.

In the context of this study, the rationale for selecting only faculty members using, or perceiving that they use hyperlinks for more than simple navigation to reading assignments, is that this work focuses on the delivery of technologies which could fundamentally change the way teaching and learning takes place. How faculty learn about and understand them as they become increasingly complex is important to understanding by what means faculty approach online course design, and what support mechanisms are needed to facilitate the development of quality online courses.

Instrumentation. Once I identified the sample, and selected participants agreed to a meeting time, the interview process began. Semi-structured interviews (the survey instrument is available in Appendix B) of 60-90 minutes were conducted with each of the selected faculty members in a location of their choosing, with four out of five selecting to meet in their offices. With permission, the audio of the interviews was recorded and transcribed.

The survey instrument was developed to gather a range of data reflecting faculty members' experiences with reading, hypertext, online instruction, online course design, and student observations. Participants in the study also opened one or more of their online course offerings to exploration, for the purpose of allowing an observation of how hyperlinking played a role in the online course design.

Part I of the interview asked questions about faculty members' personal history of reading. This section aimed to identify each subject's views on reading, and the preferences and predicaments they encountered reading in the digital age. Their own use of hyperlinks in their reading was explored, as well as changes over time in their own

reading preferences including whether they preferred electronic books or printed, and whether those preferences varied in regard to reading goals.

Next, Part II explored faculty members' personal histories in online teaching and learning, including their experience with online course design. Questions regarding length of time they had been teaching, whether or not their undergraduate or graduate work incorporated online technologies, the types of online technologies they had encountered in their own learning, and their memories of online technologies were discussed. Additionally, this section looked at whether the faculty members had experienced online learning as students themselves either prior to or after undertaking the delivery of online courses of their own. They were asked to think about the course spaces they create and the design process they followed to get there. Finally, teaching formats were explored: whether they teach only fully online courses, or a combination of fully online, blended (replacing at least 50% of the course seat time with online activities), and face-to-face courses.

Part III delved into their history with and perspectives about hyperlinks and hypermedia. They were asked to share the thoughts and behaviors they associate with the terms hyperlink and hypermedia, as well as how they use links in their online course design. For example, each participant was asked if they saw links as being strictly navigational (a means of simply getting people from place to place) or explorational (facilitating browsers' desire to explore inter-related resources in their own way). Beyond their perceptions of hyperlinks and hypermedia as a technical object, they were asked to assess the pedagogical advantages and drawbacks of using hyperlinks to deliver content, and how successful their hypermedia design was in its intended aims and means

including student questions, and how they ensure that students are doing what they were asked to do. Finally, each faculty member was asked what they would absolutely do again in regard to online teaching, and what they would never do again.

The final section, Part IV, delved into faculty members' perceptions of student behaviors in their online courses, specifically how students interact with and use the hyperlinks and hypermedia they provide. This section looked at whether the student behaviors observed reflected the intentions of the course design and instructional decisions made while developing the course. A key question in this section asked faculty members what their sense of students' attention span was, whether they tried to manage that attention span, and whether or not they had seen changes in student attention span over time, or in regard to hypermedia. Finally, perceptions of their own attention span when interacting with hypermedia were explored, as well as what compels them to click on links when they are presented in a book, article, or instructional materials.

Beyond the interviews, each participant allowed an observation of their online course space. This course access provided context to each interview, providing a means by which hyperlink use could be explored as well as discussed. Instead of faculty perceptions of their hyperlink use alone, each course is represented in tangible terms that can be tied to the experiences revealed in the interview process.

Coding. As is standard in the practice of classical grounded theory, interviews were coded in open and selective rounds. In the open coding round, the base questions asked are those recommended in Chapter 13 of The SAGE Handbook of Grounded Theory, from Glaser's 1998 work: "What is this data a study of?" "What category does this incident indicate?" "What is actually happening in the data?," "What is the main

concern being faced by the participants?,” and “What accounts for the continual resolving of this concern” (p. 140)?

Selective coding was performed based on the five categories revealed by open coding: a personal history of reading and hyperlink consumption, teaching and learning with hyperlinks, learning to teach online, and assessment of hyperlink use.

Researcher Role

I have worked in instructional technology for approximately sixteen years in roles varying from support technologist to server administrator to instructional designer and researcher. Prior to that, I encountered instructional technologies (including hyperlinks and hypermedia) during my undergraduate and graduate studies. My master’s degree in education, focusing on educational technology and K-16 leadership, was completed online, with work beginning in 2006. Yet, in my job as an instructional designer, I have observed very little fundamental change in the way online courses are delivered. They are still largely an exercise in reading, be it in instructor-crafted hypermedia, or downloadable electronic articles. I am also old enough to remember when the Internet began to show itself as a useful tool for learning, and I cannot help but reflect upon how my reading and learning habits have changed since my first college course in 1996.

My work in instructional design and research has revealed to me the importance of understanding what works when it comes to student learning, and what does not. More important than to understand “what,” however, is to understand “why.” With a better understanding of the “whys” behind teaching and learning online, will come a better basis upon which to develop best practices and faculty support in the development of courses that incorporate technology.

Summary

Technology has, and continues to change the way teachers teach and students learn. It has also changed how instructors seek help and make instructional decisions based on what they know, or feel that they can do. In the chapters that follow, reading habits are a large focus. While reading may seem to be secondary to answering questions about online course design, I argue that it is not. The thoughts of the participants represented in this study reveal the similarities and differences in how they think about hyperlinks and hypermedia. The hyperlink is not necessarily in danger of becoming obsolete in the immediate future, but is a technology that is transformational in nature and deceptively complex. Over the course of each interview, faculty members reveal the impact that their reading habits have on their approach to, and perspectives on online course design. Ultimately, online faculty replicate what works for them in how they develop the hypermedia for their online courses. Their reading habits, experiences, and preferences heavily impact the online course experience for their students.

The chapters that follow relate the experiences and perceptions of five online faculty members at a doctoral-granting public research institution. Each chapter begins with an exploration of subjects' personal history of reading, and how they interact with hyperlinks and hypermedia. Chapters then move toward a discussion each faculty members' views of teaching and learning with hyperlinks including how they are perceived to fit within online course designs. In this section, I also draw parallels between their reading habits and how course designs are considered. Next, I look at how faculty members came to know what they do about online teaching, their experiences in how they seek help, and how they learn new things to incorporate into their courses or repair

problems that arise with the technologies they have selected. Finally, faculty perceptions of how their students interact with the content they develop, what (if any) measures are in place to measure how successful they are in their hypermedia aims and goals, and the changes they have observed over time in how students interact with online learning content.

Chapter 2: Anna - From Learning with Hypermedia to Teaching with Hypermedia

Introduction

Anna, who lives a tech-savvy life, sought many avenues in order learn what was necessary to pursue a career not only teaching online, but supporting others who teach online as well. As the co-director of an online Master's program, she teaches courses in online pedagogy, consisting of students ranging from K-12 teachers to practitioners in the field of higher education. She coordinates multiple MA certificates in teaching with technology, and personally acts as an evangelist for the power she thinks technology has to transform teaching practice. She started her technology-enhanced teaching career in 1997 with high school students, before teaching elementary school and finally, as of 2005, coming to settle as an instructor in higher education.

Anna's path to learning is not one of faculty development in the traditional sense; rather she draws from a variety of sources including her undergraduate education, and her own self-directed explorations. From these experiences, she has seen her perceptions of hypermedia's role in online teaching and learning evolve since her first days as an online instructor.

A Personal History of Reading and Hyperlink Consumption

Reading is important in the exploration of hyperlinks, in that reading habits can help illuminate thoughts about hyperlink use. For example, a very fast reader may be less likely to stop and delve into the hyperlinks they encounter in a linked text. Conversely, a slow and purposeful reader may be more inclined to explore as they go. Anna classifies herself as a fast reader, but a functional one. "I think I'm a fast reader," she said. "And I do read for pleasure at times but I read functionally for work, so like Twitter is like short bits of text, e-mails, things like that...a majority of my reading is that type of reading."

But I also, when I read for pleasure, I read fairly quickly but understand things pretty much in-depth.” Anna extends Twitter reading as a means of enhancing social presence in her courses also, frequently including course identifiers in her tweets, encouraging students to read an article or respond to a colleague in need. According to Dunlap and Lowenthal (2009) Twitter can be more useful at delivering “just-in-time” content (p. 129) and building social presence in an online course than the standard features of a learning management system due to its potential for immediate networking, necessity for concise writing, and broad availability of different types of information (p.132).

Reading for efficiency and functionality is key to Anna’s reading and beyond, as she seeks speed in most of the things she does. With a busy job, frequent travel, and a long commute, she often looks to maximize the time she has available. She is an adept and frequent participant on the Twitter social media platform, which offers her access to much of her professional network for fast advice or information. In reading, she finds that e-texts are “annoying” for pleasure reading. “I’m in front of a screen like 24 hours a day,” she said. However, she finds the speed and fast access of e-texts indispensable to her work. “If it’s a book I’ll need for work or research, it’s like 100% e-books because I need to get those quickly and I don’t need to read those as much in-depth as I would like a fiction book or something like that,” she said.

Anna rarely accesses provided hyperlinked resources as she reads e-texts. However, socially linked passages draw her interest from time to time. “I’ll use those if I read a book on Kindle, a lot of times if something is socially underlined I’ll follow those links or hyperlinks just to see what those people said,” she said. In both reading and teaching, Anna values links as a conduit to social queues, advice and information, less as

a connection to additional readings or locations. This is reflected in her desire to see what others say about the Kindle texts she is reading. It is also paralleled in research, as hyperlinks have been shown to carry social importance in addition to their outward simple navigational functions, and these social queues affect Anna's reading and frequency of further exploration. The literature offers a mixed view as to whether students also find benefit in the enhanced features of e-text, such as socially hyperlinked passages. Shepperd, Grace and Koch (2008) found that e-texts are more valuable to students than traditional texts in teaching and learning, as they offer the potential for immediate interventions and idea sharing. However, Woody, Daniel and Baker (2010) find that students prefer traditional paper textbooks, and rarely access anything other than the surface content in an e-text. From a social standpoint, De Mayer (2011) points to the social significance hyperlinks can carry, noting that in some contexts, "hyperlinks are interpreted as proxies for other social phenomena" (p. 4) such as indication of subject authority, a reflection of the linker's political opinions, and making connections to others. In this regard, Anna's words focus primarily on the power of hyperlinks to connect and reflect authority for both herself and her students.

Teaching and Learning with Hyperlinks and Hypermedia

Hyperlinks are common in Anna's courses, and are considered required reading. "I think it helps to explain yourself more as an instructor, an online instructor. So instead of maybe a list of um what do you call it, like, um citations, or a bibliography, I think that in text hyperlinks are much deeper because you're able to at that moment show the connection and to deepen understanding. And maybe I totally don't understand how my students are reading but I think that helps rather than after the fact going 'this is what I'm thinking, follow this link.'"

She also hopes her students use hyperlinks to guide other students in the course to resources or locations they might find useful. Her thoughts on hyperlinks derive from a many sources, ranging from her work as a PhD student and her work in [Midwest University professor]’s class, to her work and exploration in her field of educational technology, and her own thinking and experience with the open Web. Both Anna and DeSchryver & Spiro (2009) find that exploratory hypertext learning was better suited to high-level learners, while those at lower or beginning levels needed additional structure and scaffolding. This illustrates how the dynamic nature of the web can pose learning opportunities as well as challenges. “I think that [my evolving philosophy about linking] is a function of the web itself changing - the web used to be static, now it's dynamic,” she said.

Since the mid-1990s, the Web has evolved through several stages of technical maturity. The three most visible are often referred to either simply by number (Web 1.0, 2.0, 3.0), or by function (the *Information Web*, the *Social Web*, and the *Semantic Web*). The dynamic nature of the Social and Semantic webs create the potential for active, complex learning environments, requiring advances in pedagogy and tool selection. (Paquette, 2011). The cognitive differences for learners navigating purposefully structured learning environments, and who are provided instruction on how to navigate and interact with course materials, cannot be understated. According to DeSchryver and Spiro (2009), “what is considered extraneous cognitive load in well-structured domains is often germane in ill-structured domains” (p. 141).

Well-structured domains serve primarily to deliver content in an orderly way that highlights learning goals. “Answers exist to questions posed in well-structured domains.

Therefore, the primary goal for learning in well-structured domains is the construction and automation of schemas” (DeSchryver & Spiro, 2009, p. 141). Well-structured domains would be well suited to introductory online courses, or courses aimed at remediation for students in danger of attrition. Anna hints at well-structured domains as well, referring to past courses. As a student, in some cases, this well-structured presentation was memorable, and in other cases, it was less so. Instructionally, she emulates memorable hyperlinked experiences she has had, lending her voice and instruction to students, guiding them in how they should interact with the hyperlinks she provides. While Anna aims for a well-structured domain, she avoids “click oriented” experiences, focusing on activity design that encourages student engagement and instructor presence.

Distinct from well-structured domains, the learning goals of ill-structured domains are situational (DeSchryver & Spiro, 2009). There are no set answers in ill-structured domains, and students are often left to explore their interests. Here, we see Anna’s instructions as preparation for “situation-sensitive ‘schemas-of-the-moment,’” (DeSchryver & Spiro, 2009) and can see in her words experiential remnants of these domains remaining with her from her experiences as a student as well. Ill-structured domains tend to be less well suited to beginning learners, as one must have prior knowledge in order to know what to explore. Additionally, attempts at learning-focused exploration without prior knowledge upon which to build could result in Herculean mental efforts. Learning Management Systems can, in many cases, play a role in reducing these cognitive efforts.

While Midwest provides a Learning Management System (LMS), Anna does not always use it. Sometimes she experiments with other mechanisms for delivery of her teaching. “I really see it as just a container or a vehicle,” she said. “I haven’t taken advantage of a lot of the technical aspects of course management systems, so I just see it as another space to display the content really. I think that’s a function of just not having time to play with the system. But my philosophy in designing classes and working in university environments like this has always been that it doesn’t matter what the learning management system is, it’s just a vehicle and I can make any of them work, I’m not going to complain if it’s ANGEL, Moodle, whatever. It’s just, I can make them all work.”

Her courses designs incorporate both navigational and explorational hyperlinks (De Mayer, 2011), as well as instructions as to how students should interact with them. “It’s very explicitly linked out, so at the beginning of each course I have a statement on how each student should read the course material, so anything that is a hyperlink is expected to be clicked on, and read,” she said. “And, it may just be ‘I went to school today,’ the word school is hyperlinked out to Midwest University or something like that. So, it’s very intentional, the links that I have them click on, or I might explain that, um, I don’t know, XYZ 2006 says that... and I might highlight XYZ and have that link out to the article, so it’s meant to be that an additional reading, along with the regular text.” She also has a sense that her use of hyperlinks has evolved as she’s taught, becoming more nuanced as she has gained experience. When asked about the use of hyperlinks in a course taught earlier in her career, she noted “I don’t think it was as nuanced as it is now. It may have used them, but was probably just as a link to resources and websites and stuff not necessarily intentionally linked right within the reading,” which ties to important

design notes. Anna appears to feel that seasoned hyperlink users link to resources from within the text, and considers nuanced use of hyperlinks to extend beyond simple lists of resources.

When it comes to the course design process, Anna works at two different administration levels in her role: curricular and individual course. For the higher-level curricular planning, she relies on collaboration as a key component of her design process. “First, I gather a team of people to help me because I don’t necessarily like doing it on my own... I want to have a range of voices in there,” she said. “We look at the range of topics we had to cover, how those sort of mapped out, and then literally had sticky notes and stuff all over the wall and sort of figured out a flow for the courses before we even got to the curricular level stuff which is highly organized, and the higher level organization of the topics.” Here, hyperlinks took the form of sticky notes rather than electronic entities. Burbules (2000), defines hyperlinks as anything manually taking individuals from place to place in a body of information. In this case, sticky notes were the conduit, as opposed to the more commonly expected clickable, electronic incarnation.

Learning to Teach Online

Anna is a young professor, and experienced many different forms of technology in her own educational experiences. In learning new things, Anna relies on connecting with others, and collaboration is very important to how she works and decides to incorporate new ideas. She emulates what has worked for her, but is not risk averse when it comes to trying new teaching methods and technologies. However, before adopting a new technology, she experiments heavily and seeks feedback from others, assessing not only the usefulness she perceives, but also how useful others have found it, and how

useful it is likely to be to her students. She approaches hyperlinks and hypermedia in the same way, carefully considering what links are most pertinent to the content, and providing instructions on how they should be used. Finally, she uses linking to connect her students to other students and new ideas, emulating the social environment she finds so critical to her own learning.

Anna was an early student of online learning, studying for a Master's degree in telecommunications from 2001 to 2004, and completing approximately 80% of the course work online through an early course management system-like delivery mechanism known as the Widgets system. "As I remember it...I'd enter the online environment and there were course modules that you would read through, there were discussion forums, and then activities that we would have to do or assignments or activities related to technology." Part of this learning was also teaching as, for her thesis *Attempting To Become An Online Professor*, she built an online course module as a part of her final submission. This project, she says, was undertaken after several semesters completing and emulating online coursework.

From a student perspective, she remembers, the hyperlink interactivity in the online coursework she completed was hit or miss, centered mostly in courses focused on media production or telecommunication. While some courses were highly interactive and engaging, others were largely experiences in clicking and downloading. Networking classes, for example, were primarily focused on writing papers and reading articles. Interactivity with hyperlinks in courses of this style was limited to navigation and function: clicking to download or access the reading, then again to upload the paper.

Memories of interactivity in the course environments she encountered had an impact on Anna, but research indicates that the education levels of the learner play a role in how effective this interactivity is (Amadiou, et al., 2009; Cagnoz & Altun, 2012; DeSchryver & Spiro, 2009). Lower-level learners tend to need more guided exploration and explicit instructions on how to interact with course materials and tools; while more advanced learners can learn and function more easily in an open exploration environment. In an essay in *Distance Education*, Naidu (2013) further notes, “How much interaction is enough depends on ...educational level and context, and how it is designed and executed has implications for students’ as well as teachers’ workloads and their commitment to the tasks” (p. 3).

Hyperlinking had an impact on Anna’s own student experience. She specifically remembers the hyperlink use in courses that took her beyond the virtual walls of the Widgets system, and into the open Web, allowing her to explore resources and information. “I remember specifically the media classes, the hyperlinks there would have been links out to the web for additional resources and information,” she says. “I think the links in my networking courses were more navigational hyperlinks to get back and forth between modules.” Anna uses words like “think,” and has difficulty recalling specific details about the less interactive courses than the ones that utilized hyperlinks in the exploratory way she preferred. For her, observation indicates that integrated, interactive hyperlink design and use made a long-lasting, tangible impact that carried beyond her student experience and into her faculty career.

In her current course design and hyperlink choices, she thinks about what made these courses memorable, and designs her own hyperlink use with purpose, using her

history as a guide. Hyperlinks can introduce roadblocks to student learning when their inclusion is not carefully considered. Cagnoz and Altun (2012) found that hypertext readers were more likely to get lost in content when the structure of that content was hierarchical but the presentation was verbal, indicating that, “in addition to readers’ prior knowledge and concept map structures, hypertext structure together with presentation type might influence readers’ perceived disorientation” (p. 95). So, not only hyperlink placement, but also their presentation is important in online course design. Cagnoz and Altun (2012) also found that short-term memory “functions independently from hypertext structure; yet, it is affected by the interaction of hypertext structure and presentation types” (p. 96). This highlights the importance of considering structure and providing clear instructions for hyperlink interactivity when designing online learning experiences, as seen in Anna’s work.

Previous learning experiences provided fodder for Anna’s early design choices, with her course work in her MA program teaching her to use hyperlinks in instruction, and the experience of being an online student influencing the choices she made and continues to make in regard to how her students interact with hyperlinks: “I had ...specifically those Widget courses, creating to me in my head what was a living interactive environment where you actually felt the presence of the instructor, maybe not a lot of interaction with your peers, that sort of just happened naturally but it was really, I mean the students interacted with the [links], hopefully in an authentic way.”

Anna places value on true interactivity within the course environment and the content and communication that builds it. She thinks hyperlinks provide value to this interactive experience. She goes further to say, “what I rejected... was like my

experience in that networking class where it was just reading and writing or even some of the professional development I have to do now like those IRB training modules, the online ones, are just very ‘click oriented’ and it doesn’t feel like a very authentic experience in the sense of having quizzes,” she said. The different experiences she describes, having lived them from the student perspective, are the reason she says “I don’t use quizzes in my courses, it’s all project-based stuff.”

Teaching, Learning, and Assessment of Hyperlinks

At the individual course level, Anna prefers to follow a similar model for each of the courses she designs. “I have a model that I’ve used in my online courses which we then replicated for this, which each, what you can call week or chapter or unit that opens up has the same flow. So there’s an introduction page, there’s a [lecture] page that gives the information, then there’s the next activity that asks the student to explore some sort of technology, and the final activity will be either the assignment itself or to share out what they’ve done.”

Anna uses hyperlinks in two different ways in her courses: first to deliver lists of additional resources or external references, and secondly to deliver “lecture” materials via enriched text. She says “So, what I do now, two different ways, one is listing additional resources, sort of external things. The other way I use it is the ‘lecture,’ I have inline hyperlinks that I expect the students to click on and read for further information so that is part of their understanding, not something that’s done after the fact, I want them as they’re reading to click, read that additional resource, then come back to the online lecture.”

[Course Home](#) | [Content](#) | [Course Tools](#) | [Assessments](#) | [Communication](#) | [Help](#) | [Admin Tools](#)

[Table of Contents](#) > [Unit 1 Foundations](#) > [Unit 1: 1.1 Road Map](#)Print

 **Unit 1: 1.1 Road Map** + Previous Next

Last Visited Oct 22, 2013 10:36 AM

The Road Maps at the beginning of each unit will serve as a self "checklist" of sorts to help you manage your workload and understand your responsibilities and assignments for each unit. You can always return to the "Road Map" page and take mental note of the overarching tasks to make sure you're on target.

You will also need to make sure you are linked into our CEP 822 "Assignment Tracker." I sent an invitation to your @msu.edu address. If you would like me to share the document with an @gmail address, please let me know. Here is a video describing how we're going to use the Assignment Tracker this semester:

(If the embedded video is not displaying (it's a Firefox issue), you should switch to another browser or simply click view the screencast here: <http://www.screencast.com/t/Og1FRpmoYh>)

Figure 1. Inline hyperlinks. This figure illustrates Anna's use of inline hyperlinks in course content.

Table of Contents > Unit 1 Foundations > Unit 1: 1.3 Reading Print

Unit 1: 1.3 Reading + Previous Next

Last Visited Oct 22, 2013 10:37 AM



You have two readings this week. The first is Chapter 1 in *When Can you Trust the Experts*. The second is a piece by David Berliner which is linked at the bottom of this short section.

Try this thought experiment. Suppose you were asked to identify the most prestigious and difficult areas of research. What domains, fields, or discipline come to your mind? Physics? Genetics? Disease research? Cancer research? If you were to pose this question to [David Berliner](#), (*who is pictured at left*), he would provide a surprising answer to the question. He writes, "Easy-to-do science is what those in physics, chemistry, geology, and some other fields do. Hard-to-do science is what the social scientists do and, in particular, it is what we educational researchers do. In my estimation, we have the hardest-to-do science of them all!" (p. 18).

What? Educational research is the hardest science of them all? More difficult than physics? Berliner makes this provocative claim in his short piece, "Educational Research: The Hardest Science of Them All." But on what basis does Berliner make such a bold statement? And who is David Berliner? We'll start with the easy question and move backward. David Berliner is a widely-known and influential professor at Arizona State University. He's the editor of the *The Handbook of Educational Psychology*, which is an exhaustive resource on learning theory and educational psychology. He's also a vocal critic of the "standards movement," of which anyone who has worked in education since No Child Left Behind is well aware. He expresses many of his criticisms in his book with Bruce Biddle, [Manufactured Crisis: Myths, Fraud, and the Attack on America's Public Education](#).

In the article, you'll find that Berliner identifies three fundamental difficulties in doing social science research: the power of context, the ubiquity of interactions, and the problem of "decade by findings" interactions. Through these three challenges, Berliner describes with exceptional clarity the difficulty of doing social science research. As you read this article, think carefully about the conversations you tend to have about education, educational research, educational policy, and "best practices." If we accept Berliner's argument, how might our conversations about educational research, policy, and practices change? Looking back at the philosophy section of the first lecture, in which philosophical school do you think Berliner belongs? In your reflection as an educational professional or insider, would you agree with Berliner that human mental measurement is challenging --- or perhaps, even limited?

Berliner, David C. [Educational Research: The Hardest Science of All](#). *Educational Researcher*, Vol. 31, No. 8, pp 18-20.

After reading Berliner, start with the Introduction: What Are You to Believe (pp 1-28) of our textbook *When Can you Trust the Experts* by Daniel Willingham.

Our class discussions for this unit will take place in Piazza. I find the discussion forums in D2L a bit cumbersome (do you agree after posting your intros?) We used Piazza in CEP 822 last semester and student feedback was very supportive of using the platform again. I sent an invitation email to your MSU addresses (if you need another invite, please email.)

Questions have been posted to Piazza. You are grouped into teams (your team can be found on the "Road Map" page.) Please join your group if you have not done so already. You are free to peek at other group discussions but breaking the class into smaller groups will help make the discussions more meaningful.

When you're ready, head over to the "Unit 1 Discussion Forum" <https://piazza.com/class/hl1b5qwr9lv443>

Figure 2. Hypermedia course content. This screenshot illustrates a full page of hypermedia content in Anna's course.

Anna sees hyperlinks within this design structure as a means of facilitating students' exploration of topics rather than as navigational tools. "I don't, even though the back and next buttons are technically hyperlinks, I guess I don't even really see them that way if that makes sense," she said. "I just see them as the way you get back and forth. Which is a hyperlink but in my mind I see it as explorational and a way to get more

information to the student, or to enrich their understanding of something.” Hyperlinks included in the content, she tells her students, are intended to enrich their understanding of a particular topic by facilitating a further exploration of that topic on the open Web. The links she provides serve as a starting point, and she asks students to explore further on their own.

Anna finds drawbacks to teaching with hyperlinks as well as benefits, but attempts to mediate them with solid pedagogical design. “It could, I think, be potentially distracting or confusing as well, especially if you link to a kind of a cool resource and they get kind of lost in that resource, but that’s one of the reasons I utilize the opening them in a new window, because then my lecture, my content is always somewhere in their experience,” she says. The design and use of hyperlinks in teaching is again highlighted here. Cagnoz and Altun (2012) found that the ways in which hyperlinks were presented in text had an effect on learners’ abilities to navigate and recall information from them. DeStefano and LeFevre (2007) found that the complex nature of hypertext has the potential to increase learners’ cognitive load, “minimally...introduce[ing] decision-making processes and interruptions to reading that can either enrich the reading experience and/or increase the complexity of the comprehension process” (p. 1619).

Despite the potential drawbacks she mentioned, when it comes to design for online teaching and learning, Anna would “absolutely” continue her practice of using in-text hyperlinks for her students, combined with explicit instructions on how she expects them to be read and interacted with, reiterating these expectations on a weekly basis as students start out in the course to “really hit home to them how we want them to read.”

She also has specific ideas about how she wants hyperlinks to play a role in how students interact within her course. “I very much took take cues from [another professor’s] mentality that students are interacting with the content instead of each other... I enjoy that philosophy. Because, when I was an online student, I didn’t really necessarily enjoy group projects or I liked having the choice to do that. And I thought it was very respectful of the students’ time... I want my students to walk away feeling like they had individual attention from me, and that they were able to engage deeply with course content.”

Anna’s teaching philosophies about the use of hyperlinks as components of course design reflect the design of her courses. She frequently uses links to facilitate social interactions and sharing. They are embedded in the text of the module, and bring a sense of motion to otherwise static text. Clear instruction is provided for how to interact with the hyperlinks, and the expectations therein. Hyperlinks are a key component of the content delivery and crafting of instructor presence in Anna’s courses.

Perceptions of Student Interactions and Effectiveness

Assessing student behaviors is a difficult endeavor in online teaching. While she doesn’t have time to systematically assess the effectiveness and behaviors associated with individual (or aggregate) link experiences, Anna does use student assessments and feedback to assess student behaviors in her courses. “We’ll get some feedback that the resources we pointed them to were very cool, and I can also tell in products the students that have followed the hyperlinks and the students that haven’t. Because I’ll sometimes...know by the quality of a product whether or not a student fully read everything we wanted them to.”

Anna senses that her students know what hyperlinks are in the course, and what they are for, but that they may get lost in the content sometimes, depending on how those links are delivered and designed. “I think that, and maybe incorrectly, that people understand what hyperlinks are and that they should click on them...I still think that depending on how something is developed sometimes people may still think the hyperlink, that whatever is linked to with the hyperlink is created by the individual, they may not necessarily know, unless it opens in another window, may not see it as a separate experience, does that make sense? And I think that people, that a hyperlink is still traditionally blue underlined, some color underlined, I think that people would still look for that.” The opinions in the literature are mixed when it comes to how learners interact with the hyperlinks they encounter on the Web. Some scholars find that way finding and cognitive load are heavily affected by hyperlink placement, design and instructional scaffolding (Cagnoz & Altun, 2012; DeSchryver & Spiro, 2009) while others find that motivations to even click on hyperlinks vary, so while the instructions and design infrastructure may be there, learners may be unaffected because they may never click on the link at all (Burbules & Callister, 2000; Carr, 2010; De Maeyer, 2011; Easley & Kleinberg, 2012). In other words, there is no guarantee that blue, underlined text will be clicked, and there is further no guarantee that the content within will be consumed if students do click on them.

Anna is cognizant of her link use, and how she instructs students to interact with them but, as mentioned, systematic link tracking and task analysis are not a component of the courses she teaches. And, she is not alone in not tracking student link use. According to a 2012 Educause research bulletin entitled *Classroom and Instructional Technology*,

60% of courses on average use a learning management system, and 60% of institutions measure learning management system usage. Of these institutions, 99% use a learning management system and 65% of those faculty members use it to teach. However, 48% of those same faculty members use only the basic learning management features (Bischel, 2012). These findings gain further hold in the *Inside Higher Education* study, which found that while 76% of all faculty surveyed “always” used the learning management system to share syllabus information with their students, and 53% “always” used it to both record grades and communicate with their students, only 24% “always” used it to identify students who may need extra help (such as those who may be struggling with hypertext) and only 36% “always” used it to provide eTextbooks and related material (Jaschik & Lederman, 2013).

These surveys did not discuss the motivations driving technology choices, but based upon the body of research, and themes from Anna’s interview, it would not be far-fetched to consider that lack of faculty time may play a role in this oversight.

According to Anna, assessing link metrics is high on her wish list of things she would like to find time for. “Some people do [assess link metrics], I think that would be something that, if I had time, of course I would love to. But it’s something that falls off with lacking time.”

It is easier to assess some student behaviors in online courses than others. Attention span, for example, is difficult to measure in a systematic way. Some research indicates that student attention and navigational skills can suffer in hyperlinked environments (Amadiou, et al., 2009; Cagnoz & Altun, 2012; Carr, 2008, 2010; DeSchryver & Spiro, 2009), but Anna is not ready to say this is something she sees in her

course. “It is so hard to judge, I think, and I wouldn’t venture to say that I have a good sense of that,” she says. “I feel that in the online courses that the students wait until the majority of the students wait until the last minute and then budget Saturday to do the majority of their work and turn it in. So I feel like during that time period their attention span may be deep and engaged, but I don’t know how much the ideas sit with them.” She also attempts to mediate student attention span through instructional activities. “We just recently in one of the courses asked students to write out their week, like how much time are you going to spend on this, this and this. Still, I don’t have enough evidence yet to see if that worked or not, but I don’t have a good judge of that [attention span], and I would assume, unfortunately, that it’s not as deep as I would, of course, want.”

Hypertext certainly plays a role in how students interact with text, and their attention spans are affected when they encounter multiple paths instead of one. Carr (2008) cites a study in which researchers found “it is clear that users are not reading online in the traditional sense; indeed there are signs that new forms of ‘reading’ are emerging as users ‘power browse’ horizontally through titles, contents pages and abstracts going for quick wins. It almost seems that they go online to avoid reading in the traditional sense.” In online learning, these “quick wins” might take the form of information students need in composing essays, or to answer assessment questions. In Anna’s course, she is explicit in her instructions, so “quick wins” for a student would adhere more to those hyperlinks and pieces of content that conform to her instructions and allow them to complete the assignment.

Anna notes that attempts are made in the course design to manage student attention spans with strategies such as providing the expected amount of time it is

expected that students will spend, or recommending that they set a timer to keep themselves on task. She also encourages them to evaluate how on task they remain as they proceed through the course content. The literature underscores the value practice, with tangible benefits ranging from helping learners remain oriented in the course, to assisting with deep processing of the content related to learning objectives (Cagnoz & Altun, 2012; Oulasvirta, et. Al., 2005). Much as a reader can become disoriented in a “choose your own adventure” story book that requires backtracking to review the previous storyline, it is possible to become disoriented in heavily linked academic text that requires backtracking to review content. Repeated required motion within text can result in increased cognitive load, time to completion, and potential frustration. These potential student difficulties are important for faculty and design practitioners to remember in the course design process.

Chapter 3: John - Hyperlinks As Portfolios

Introduction

John is a tenured full professor, and has been a teaching and research presence in higher education for 25 years. Most of his career has been spent at Midwest University, teaching courses with topics ranging from introductory teacher education to psychology and technology. However, not all of his teaching experience has been centered in university settings. After two years in the U.S. Marine Corps, John taught high school physics and chemistry before pursuing his graduate education at Stanford University. Upon the completion of his graduate studies he was hired at a research institution in the Midwest United States for a time before coming to teach at Midwest University.

John has been involved since the earliest days of online education at Midwest University. He was one of the “dozen or so” faculty members who met in 1999 to discuss whether the College of Education should offer an online Master’s program. “The dean was under huge pressure,” he said. “Midwestern University’s president had attended a conference at which the for-profit online institution the University of Phoenix had said they were ‘going to eat our lunch.’ This competition resulted in pressure upon the dean of the College of Education. The Dean was saying ‘we’ve got to get something going,’ and she was just insistent,” he said.

Thus, faculty meetings began, aimed at figuring out whether an online master’s program at Midwest was possible, or even desirable. “The dean’s door used to open into [the conference room] and she’d open her door and ask ‘they called again, have you decided to do it or not? If you don’t want to do it tell me because I’ve got to face them down but the pressure is intense.’” As the meetings continued, the Office of the President persisted. Again, the Dean’s door opened into the faculty meeting - “they said they’d give

any faculty member who'd do it \$10,000 of equipment or anything else they want," she said, and shut the door. John remembers "the faculty all sat around the table, all smart people, and said things like 'I wouldn't even take an online master's... I've never even taken an online course... who would want it... who would think it was any good... how would we know it was any good?'" In November of 1999, the faculty committee voted to develop an online master's program in general education "because we knew that no single department could do it, or would do it."

Interest was piqued and people began asking what a general education master's curriculum entailed. "We said, we don't know, we'll figure it out," John said. The day after the committee notified the dean of their decision, a press release went out announcing the new fully online master's program at Midwest University. "No one in the room had ever taught an online course or taken one. We didn't know a thing about how to develop one," John said. "It wasn't clear, I don't think, to anyone in the room, how rapidly every master's in education would go there [offering fully online programs] because teachers don't have time to drive to campus, and they got the same pay wherever they did it. Within four, five, six years, every university started offering it."

As his career has progressed, John has seen technology and pedagogical innovations come and go. He has also his own preference and practices in reading, pedagogy, and learning change. He saw his first word processor and thus his first digital text in 1972. He remembers when Apple unveiled the Hypercard, a pre-cursor to the modern Web that allowed users to browse through "cards" that were created either by themselves or by other users. Today, with all of the technological advances the growth of

the Internet and the Web have afforded, he still sees the hyperlink as a means to bring the world to students of all ages, and vice versa.

A Personal History of Reading and Hyperlink Consumption

John is a prolific reader, and reads “very, very fast.” He classifies himself as “an obsessive picker-upper of brochures and magazines.” He regularly reads the *New York Times*, *The Chronicle of Higher Education* and *Education Week*, along with many electronic Google News feeds. Beyond education publications, he subscribes to business trade publications to keep tabs on what is happening in the world of big data and analytics, considering the business world to be ahead of the education sphere when it comes to topics and trends. In addition to reading the electronic versions of these publications, when possible he obtains paper copies as well, so he can place them outside his office to share with the graduate students that work nearby. John enjoys reading and organizing his materials electronically, saving web pages as bookmarks in his Internet browser, organized by folders that he has labeled for each of his courses. John did not encounter electronic text for the most part in his own undergraduate or graduate studies. He did, however, have a transformative research experience in 1972 when he encountered a word processor for the first time, discovering the power of electronic text and the convenience it could bring to the acts of writing and editing. Over time, his reading preferences have shifted away from paper text, and toward the searchability, lightness, and organization of electronic text.

Interestingly, at times throughout the interview, John refers to himself as disorganized, yet he displays careful information storage and retrieval methods as he speaks, and encourages his students to develop their own plans for information storage

and retrieval from the moment they enter their doctoral programs. In the vein of organization, he discusses his surprise at how few doctoral students have an organization plan: “For a new doctoral student who isn’t starting from day one to collect and organize their work that way is mind boggling to me. That would be a good little study I keep wanting to do, how many of our doctoral students in the college of education have a well-organized file. I’ve found a few who really get it, it’s habit of the heart, and it runs the risk of course, I found one student who had 1,000 references and I asked ‘yes, but what have you written?’ There’s a trap in that regard, just sheer volume.”

News aside, John is also a frequent blog reader, following mostly technology blogs. He enjoys reading op-ed pieces in the *Wall Street Journal* or *New York Times*, then searching for authors’ personal or professional blogs for more insight. “Some of them have their regular op-ed piece, but running concurrently they have a blog and so often there is something about these people whose minds I like because they’re so informative,” he said. While he has his own blog, and encourages his students to blog regularly, his own writing is infrequent. “I’ve come to realize that much of what I write and think about I send out as e-mail but then it’s less retrievable and accessible,” he said. “I’ve just given up Eudora after 20 years or more and moved over to Apple Mail and I’m really struggling because I had a whole repertoire of filters and tools and e-mailing lists and so forth, and so since Eudora won’t run on Maverick, I’ve had to give it up...I’m reconstructing my life, and part of that is to think that I should just stop sending e-mail and start blogging.”

John does not approach reading as a static activity. Most of his reading is electronic, and he often interacts with hyperlinks embedded in text. He also does

additional Google searches to find TED talks or additional readings by an author, or to further explore something he has just read. In fact, John is passionate that reading should not be a passive activity, and believes that doctoral students too readily believe that which they consume in articles assigned in class. He feels an “intense need” to know who the author is, learn more about them and their background, and feels that students should do more to seek a connection with authors whose works they consume. Research has shown that, on average, highly-ranked scholars draw more traffic to their websites and produce slightly better quality content (Thelwall & Harries, 2004). Yet, John sees that students are frequently, even at the doctoral level, not seeking more information about these scholars and their work using the Web.

I am amazed how rarely, as far as I can tell, doctoral students in our students in our program or any program; feel like they can overcome that alienation or distance between themselves and the article they are reading. By simply Googling the author’s name and trying to find the website, I push them all the time; I want to hear the voice of the person who has written this thing if I can... For whatever reason when I’m reading something, the first question I have is who wrote this? Who is this person? Where are they? But again it gets back to my notion that for lifelong learning... one of the most basic things you teach in every intro course in elementary school, is don’t just believe what you read, question the source. I don’t see that happening even in a lot of our doctoral courses.

John is a prolific reader, and believer in the affordances of electronic text for use in teaching and learning. After attending an Apple event in 1988 at which Hypercard was unveiled allowing individuals a platform upon which to create their own websites with hyperlinks, he was “absolutely dazzled and intrigued.” He said it was what he had been waiting for his whole life: the ability to put up a picture you could click on and read more about. “I came back and told the dean who, at the time was totally skeptical of technology, ‘I have just seen something that is going to change the way we learn,’” he said. Despite the skepticism from his colleagues, John feels that he has learned to leverage hyperlinks in a meaningful way for both himself and his students.

Teaching and Learning with Hyperlinks and Hypermedia

John began teaching online in 2000, offering the capstone course for the newly-developed online master’s program in education. He has, and continues to use hyperlinks heavily in his course design. They are the foundation of his teaching philosophies: free access to course readings, and empowering students to create and share work that is meaningful to them. “I don’t believe that in this day and age you should be requiring a student to buy a two hundred dollar textbook, it doesn’t make any sense, we all know that textbooks are thrown away,” he said. According to the Educause Center for Applied Research, while students’ interest in e-books flattened between 2012 and 2013, it is greatly increased from just a few years ago (Dahlstrom, 2013). While some students (26%) used no e-books at all, 35% of students surveyed used them in at least one course, while 17% used them in half of their courses or more (Dahlstrom, 2013).

John’s focus in developing his online courses is on empowering his students to showcase their work on their terms in their own courses, on their own websites.

Everything he does is situated in “authentic learning,” focused on future use (Herrington & Herrington, 2007; Herrington, Reeves & Oliver, 2014; Lombardi, 2007). “Over the last two decades, authentic learning has evolved from a situated learning model, and has captured the imaginations of innovative educators who see it as a means to facilitate the robust knowledge that transfers more readily to real world practice” (Herrington, Reeves, & Oliver, 2014, p. 402). He uses hyperlinks at the course level to connect students to resources and examples from previous semesters, and teaches students to use them to connect their chosen audience to their work. “A lot of what I do with hyperlinks is off-load onto the students to build their own hyperlinks. Show me that you can link to resources. It doesn’t matter that I can show you 100 resources. It matters that you show me what you can use and that you know how to build a website with hyperlinks.”

Authentic learning is a consistent theme in the discussion about how John approaches the design of his online courses. “That’s one of my deep felt beliefs, that animates everything I do is that too much work in school is spent on writing papers that will never be used or looked at again,” he said. “That the aspiration of the professor is that the student has both learned and can demonstrate that they’ve learned they’ve gained skills that they can apply later. I want students to leave my course having acquired skills in having used web design themselves instead of me over here assessing their web design, but not the student producing their work and sharing it.”

John is committed to providing both formal and informal learning experiences for his students, and designs his courses with this in mind. Hyperlinks, in addition to helping create a more authentic course experience and product, can connect students of all ages to new ideas and environments. He has developed this view over time, as the result of

frustrations encountered in interactions with students. He sees students who are unable to identify what they consider to be the best work they have done. If he asks for them to give him the work they are most proud of instead of writing a paper, he sees confusion and uncertainty. His students are used to seeking an experience graded by their professor rather than creating their own. “Most students struggle with the idea of work that they created and own and keep and share,” he said. “It’s alien to the system of ‘I write papers I turn them in I throw them away and I sell my textbook.’ ...ask your [students] what their best work is and you realize ‘my god, they don’t know what good work is.’”

Creating authentic experiences in sharing work, and experiencing new things are something John feels “obsessed” with, but he sees that others are not doing these things in their courses at all levels of education. “Darn few teachers do that at all and it’s so discouraging to me,” he said. “Huge amounts of what goes on in universities and schools is to justify. I see this play out in universities everywhere. Portfolios are really hot right now at universities all over, but what they really mean is companies are coming in with giant portfolio systems that universities can use to collect student work, to keep student work, to keep student work over here...I want you for the next three, four, five years to continue to grow continue to develop, continue to publish your own papers not mine, don’t write a paper that you don’t actually intend to have a readership.” To John, the creation of an online portfolio lends legitimacy to the work completed in an online program. “If someone asks you if your online master’s is really good, we want you to say ‘look at my website look at all the papers and the work I did... it is entirely possible to graduate from Midwest with nothing but a GPA.’”

Learning to Teach Online

John has learned his online teaching skills through a mix of formal, experiential and informal, self-directed training. “The courses I teach and my style and my belief system emphasize the students doing their own thing getting on the cutting edge, and the only way to do that now is on the web,” he said. When he needs to learn a technical or task-based skill, or is confused by something that isn’t working as it should, he frequently uses Google to search for an online tutorial. “I got mad the other day trying to do something with Excel, I wanted to do a Count and change colors and so forth and it was counterintuitive so I just Googled and I found what really works well when Googling for help, is typing ‘how the hell do you do...’ you find people with equal irritation levels as you about doing something that’s not obvious.” He has never taken an online course like the one he teaches, however. He has never experienced an online course or workshop with a syllabus, structure or an instructor. Though familiar with massively open online courses, and believing them to be useful means of learning the skills associated with online teaching and learning, he has never participated in, or designed one himself.

Having never experienced a formal online course himself, his course designs are driven by his teaching philosophy. “I suppose we all sort of pick up ideas and the world has changed so fast,” he said. “When we started that online MA that I mentioned, when we first started up, the university said that we had to have every course accessible via a dial up modem, they put in banks of dial-up modems, and it was ridiculously limiting. But, most of us were just scrambling to get a discussion forum up and something to read.” In the year 2000, the learning curve for faculty in the online master’s may have looked very different than we see today. However, despite the seeming simplicity of the

technologies available, new skills and pedagogies had to be learned quickly in order to launch the program. “It was right at the beginning, it just spoke to how little we knew what we were doing,” John said. “When we voted to do this not a soul in the room had ever taken or taught an online course. And, the tools were remarkably simple, so some of the design considerations today... how much video, how much audio... we were just trying to get a good syllabus and some readings up in a discussion group.”

John remembers the jump from the incredibly slow 400-baud modem and individual file transfer to the faster, more pedagogically valuable connectivity of the Web. His first experience teaching and learning with hyperlinks was not a formal online course, but a grant-funded online resource consisting of hyperlinked, categorized online resources for teachers. This project occurred in 1998, but is still in use, as John still gets e-mails from people asking them to update their links. “It’s one of the first projects we had. We had a grant from Ameritech where they were forced to give money to the universities or something,” he said. “I’ve always felt like it was one of my best creative works, but it was largely because I worked with [faculty member at Midwest University]. The idea right then was that the Web offers all these resources, and we could share them with teachers, organized by grade level, subject matter, and pedagogical purpose.” His experience with this project cemented his view of hyperlinks as a connective, immersive educational technology. “Thanks to collaboration, thanks to a grant, setting out to share resources with teachers, and how they could use the web, it was a really rich immersion in a world that had really exploded.”

At the same time as he has explored what works and what does not when it comes to hyperlinks himself, he has also learned new things about teaching online from his

students and graduate assistants. He used to think of links as simply there to connect pieces of information. Through experiences using them over time, and in collaborating with others, he has changed his views and practices.

“I just thought of it as ‘there exists a link, here is a collection of resources,’ and I think all of the links were set to open in a new window, but I don’t remember,” he said.

“So, more like, you came into my office and there was a whole stack of readings and now I can give them to you in an organized way, based on your grade level, your teaching, and what you love to do.” He believes that the most important learning resource one can tap is the people around them, especially graduate students and campus technology support staff, through engagement in collaboration. “The only way forward in this world, in my opinion, is to unleash smart students and have them show us what’s happening” he said.

“I think that’s the only way forward.”

He feels, however, that a mix of personalities and approaches must be present in a collaborative environment in order to create truly useful online teaching experiences.

You have to have a staff like at [central IT teaching and learning department], and you have to have people smart like [the director of technology in another unit] and you and others around, and people like [graduate student] teaching me about Facebook and all that, the only way forward is to unleash people... If you have just a chaotic guy like me, you’re never going to get things organized, but if you try to specify and believe there’s a right answer forever, what you end up with is what Phoenix has. Nice, stable,

predictable, and in certain respects boring, but effective if you're teaching relatively boring stuff.

In addition to learning from people and self-sought online tutorials, John also participates frequently in campus seminars, workshops and brown bag presentations. Austin and Sorcinelli (2013) point to the need for diversification of faculty development offerings as important to serving faculty as technology evolves and campuses change. John is an example of a tenured faculty member seeking out and participating in a variety of development opportunities. He has also created some of his own, as a service to other faculty. For several years, he has worked with a large number of faculty and staff on the Midwest University campus to organize technology learning events. He says the act of organizing these events over time has been a learning experience in what helps faculty learn about technology and how to effectively use it in their online, blended, and technology enhanced courses. "From my point of view [the] loose format we have now has turned out to be so much better than the keynote speaker we started out with. Having people mix and mingle and have people do what I call laptop poster sessions. Not creating a poster but having your stuff right there on your laptop."

This type of faculty gathering, organized by faculty and emphasizing that faculty learn from their peers in an informal way, can potentially alleviate some of the tensions seen in faculty development programs. Instead of professional development being perceived as a mechanism to externally force changes in practice (Hutchings, Huber & Ciccone, 2011), this showcase format allows individuals to explore, experiment, and think about what solutions and changes might fit well into their own teaching philosophies while talking to faculty who have already worked with technology

innovations to see what worked well and what did not. While finding Midwest University to be very supportive to faculty teaching online, the challenge John sees now is one of abundance. “How do you get good at a few things fast enough while they’re still useful,” he asks. “That’s why a book ... aimed at teachers on technology where you go through page after page, there’s not a teacher on the planet who can use all that. There aren’t enough hours in the day.” He believes that the hyperlinked nature of the Web, and designing courses to allow students to explore and link to what is meaningful to them in their authentic work can help alleviate this overload.

Teaching, Learning, and Assessment of Hyperlinks

As technology has advanced, so have students’ skills in using it. It is easier now for John to teach students to create a website than it was when he began teaching online in 2000. It used to take up to four weeks for him to teach the students in his courses to use web design software such as Dreamweaver to create HTML files, manually create links, and then upload files to the web server. Now, he has each student build and host their website using Weebly, a free website creation and hosting service available online. He then creates a Google Spreadsheet, which he shares with the class, where they can put the links to the work they have done.

John sees that incorporating shared, hyperlinked content into an online course design as an excellent mechanism for program assessment. “It actually is a terrific opportunity to critique our program...See what works, what doesn’t,” he said. What worries him is the thought of portfolios and hyperlinked content as a means of assessment living on a closed system instead of the open Web. “I know that even now in another department...they’re still obsessing over how to have a look back over the program, look

at whether the program did well, be graded by three faculty members and have no intention of it being visible for career purposes or getting a job,” he said. “I see higher ed is taking off and once again it’s going down the path of it’s ‘got to be as reliable as the SAT and it’s got to be efficient,’ and it will become immediately about the example of New Hampshire or Vermont where each student had to have a portfolio and it had to have exactly five things. It would be like [the local high school] where they wanted it to be locked up in their file cabinets in case an auditor came to show that the teachers had done their work. It’s a Stalinesque mindset that I despise.”

The way he uses links in his course design has evolved since the early days in his career, in part due to developments in technology, in part due to what he has learned, and in part due to the skills students have now that they did not have when he first began teaching online. “If I look back, the first year I taught the portfolio course, we maybe had six or eight people that knew anything, and made one little page with links and their pages as they built them, because we were all learning,” he said. It is difficult to quantify the links in John’s online courses with numbers as they are highly variable, and reflect the directions that students drove each semester’s content. Further, many of the links were delivered via e-mail messages that cannot be recovered for exploration. John’s links are almost entirely social and instructional (DeMayer, 2011). As described earlier in the chapter, much of his course content comes via e-mailed links, containing instructions regarding how to use the content. The gallery pages where students share their work are social, with social significance to the course as well as to each of them as individuals. Adamic and Adar (2001) discuss that, on the Web, you are what you link. In John’s class, this is reflected in students’ creation of an online persona that manifests in hyperlinks to

their work, interests, and other aspects of that which they would like to represent them to those who visit their website.

Study Buddies Paired in Same Color Rows & Two Pairs of Study Buddies Make a House Named in White Row	Initial Survey (1a)	Initial Exploration of Past Gallery(1b)	Introduce Yourself to Housemates in House (1c)	Create Your Weebly Homepage & Enter "Link" (3a)	"Link" To Your Resume (3b)	"Link" to Any Website You Have You'd Like to Share	Your Teaching Philosophy: Enter "Link"
Due Dates >>	Sept 3	Sept 11	Sept 11	Sept 18	Sept 18	Optional	Sept 29
Details of Assignment							
Technology House							
	Done	Done	Done	Link	Link		Link
	Done	Done	Done	Link	Link	Link	Link
	Done	Done	Done	Link	Link	Link	Link
Higher Education House							
	Done	Done	Done	Link	Link	Link	Link
	Done	Done	Done	Link	Link		Link

Figure 3. Hyperlinked gallery of student work. This screenshot illustrates a collaboratively created hypermedia document, sharing student work.

Figure 3 depicts a gallery of student work, as it is presented in one of John's current online courses. He describes it:

Students' work from Day 1 they present it on the web. They can opt out, but almost none do. So they watch as each other's work emerge. So instead of giving something like this and give a link to a gallery that gives 30 or 40 peoples' portfolios and all the work they did, um, so that's the way I in a sense harness the intellectual creativity and capital of my students to make my teaching better.

Within his college, he sees resistance to the idea of having students share their work openly in this way:

One faculty member argued 'why would you call that a gallery,'" he said. "It seemed to really bother them. I'm one of those people really involved

in seeing what's out there with portfolios, AERA has a SIG, and AEEE, um, and I just was amazed. People talk about this work that the students do and devote reflection on it. And I said 'can you show me their work' and they look at me like I'm crazy and they're like 'no it's locked up in the system.' I start from Day 1 saying I don't want your work locked up. If you want to do it that way I'll work it out for you, So I now have 10 and will shortly have 15 outstanding portfolios, that I give the students a \$25 nudge in [gift certificates] because I feel like I owe them something, and I send an e-mail out to the TE students and say that this is the kind of work you can do. And it markets the course and concept of every student having a Weebly classroom portfolio.

Indeed, it seems that, as John mentions, much of the literature on ePortfolios for assessment in both K-12 and higher education centers on systematic evaluation, and creating ePortfolios in closed systems, rather than on the open Web (Goldsmith, 2007; Bernhardt, 2013; Perlman, Christner, Ross, & Lypson, 2014; Yancey, McElroy & Powers, 2013). Even so, that's not to say that John does not believe in hyperlinks and sharing portfolios as a means of assessment in this way. He does, saying, "It would be a great way to evaluate our program." He actively reviews the work students share, checks that the links they share work as expected, and provides feedback as to whether they are meeting the goals they claim as their aims. "There's no better way I know of to show that they're all good, they're all different, there's no five paragraph essay, and it's a way of thanking the students for their good work."

Summing up, John approaches each course design in the same way, but the underlying reliance on galleries, hyperlinks and authentic assignments is the consistent driver of each one. He places great importance on student convenience, adopting the centrally supported learning management system, and web development tools that are easy to learn, even for those who do not consider themselves technically proficient.

Perceptions of Student Interactions and Effectiveness

Students interact in John's online courses the way he hopes they will, and he is able to follow this progress throughout the semester because of hyperlinked content. "I keep saying to them over and over, your peers are your audience not me. And, your purpose is not a course that will end in a few weeks, your purpose is the rest of your life and using these tools, the ability to create a website, which by its very nature means hyperlink, first of all it's the URL itself and then it's the links within it, sending a message, this mode of expression really matters."

John also notices differences in their reading and writing from when he began teaching 25 years ago. He finds his students to be adept digital readers, and that their skills increase with each iteration his online courses. To this end, he runs a paperless course with no assigned textbook or course pack, where all readings are online. It should be mentioned, however, that he does not ask students whether or not they print their course readings or whether they read them online. "They don't like to read very long, and it's put a premium on brevity that many scholars are bemoaning," he said. "Kids won't read long things anymore." In *The Dumbest Generation: How the Digital Age Stupefies Young Americans and Jeopardizes Our Future (or, Don't Trust Anyone Under 30)*, Mark Bauerlein (2008) voices concern that students who have grown up in an age where

Internet-enabled digital tools have always been available to bring them instant knowledge at a touch are not more intellectually developed than those who came before them. In fact, he says, in many cases the reliance on technology has hurt their abilities to think critically and reason without assistance. John disagrees. “You could either view that as a loss ... or you can say it’s an adaptive strategy given the inconceivably great volumes of stuff to read,” he said. “It could also be said that that’s why I say to doctoral students to not write a long dissertation, it’s almost impossible to reduce it to 20 pages and nobody’s going to read a 300 page dissertation. There’s a move toward brevity, succinctness. You can go back and read Kant if you want to, but very few people do anymore.”

While he doesn’t do systematic research of his teaching, John observes the effort that students put into their website development as proof of the effectiveness hyperlinks provide in his course. He sees students link to readings he has sent them, and while an assignment may call for one set of criteria, he often sees it is exceeded, with more links than he anticipated included in the work that students share. He sees them curating that which they include, and thinking carefully about how to represent themselves on their website. In effect, they are drawing representations of themselves online, via the hyperlink. “It unleashes a dream where they’re dreaming, ‘boy, I can have a blog to e-mail my parents or welcome to my class here is a picture of my pet dog,’ or whatever,” he says. “So, in this hard to find, for me to think of any way I could do that without having them be able to publish to the web using links, I mean I could have them write a beautiful essay ‘my first day in class’ or ‘my favorite lesson plan’ and they could hand it in a Word document and I could give feedback and they could edit it or not, but it’s not dynamic, vibrant, it may give evidence of learning, it may be learning, everything like

that, but so much is missed if every teacher that came to our program hadn't made [a website] and let others see it and written it with the intent that parents of the kids they teach would see it. It makes them take it seriously in a way that other things don't."

Chapter 4: Thomas - Hypermedia as Self-Created Content Delivery

Introduction

Thomas is an Assistant Professor on the tenure track at Midwest University. He is young, and in fact says that he has students in his classes that are significantly older than he is. He is relatively new to teaching, with his first teaching experience coming during his post-doctorate work in 2008 and 2009. Since coming to Midwest in 2011, he has taught face-to-face and online courses, and as he is only in his second year on the faculty he remembers each of the offerings well.

A Personal History of Reading and Hyperlink Consumption

Reading did not come easy for Thomas. “I could not read until I was 11 or 12,” he said, “and I was taken out of mainstream school and put in with a special ed school and I learned to read there for a very long time into high school. Even though I showed promise for reading in high school, reading was a very labored process for a very long time.” While he no longer finds reading to be particularly stressful or labored, he still has some apprehensions about the practice, which manifest in a constant feeling that he is not reading enough. “I try to read things and I try to make sure that I spend time reading every day,” he said. “I try to read things that aren’t directly related to my work, so things like teaching or for discussion purposes, I try to read other things.” These “other things” take the form of the New York Times, baseball blogs, and the New Yorker magazine, which he says makes him feel guilty because he rarely completes the magazine. He also reads academic books in other fields, but reads “almost no” fiction.

The consumption mechanisms for written work differ for Thomas, depending on the context of the reading. “I do all of my reading of student papers online, which has

made me a better reader, I think,” he said. “I do that because with the traffic in paper, it’s unbelievable traffic in paper.” For scholarly reading, he prefers a tangible text such as a printed PDF or book. He often reads journal articles electronically, but also prints them out on occasion. “I don’t know that I can identify why I sometimes choose to print it and sometimes read it on the screen, although when I feel like I need to be very serious I always print it, even if it loses any interactive experience it may have had.” He never reads books electronically, though he has downloaded and tried on more than one occasion. “I hate reading them online,” he said. Research shows that others share Thomas’ view of printed versus electronic text. Liu (2005) found that while 83.2% more people (as of 2005) were reading electronic text than they were ten years prior, they also noted that they were more likely to skim HTML text than they were a printed copy of the same text. The same survey found that a majority of people (80.5%) their browsing and keyword spotting behaviors were increasing while only 26.6% reported their in-depth reading or concentrated reading (21.1%) was increasing. Further, it was not only increasing at lower levels, but approximately 45% of the people taking the survey said that their instances of in-depth reading and concentrated reading were actually decreasing (Liu, 2005). That said, people who owned tablet computers or e-book readers (such as a Kindle or Nook) were far more likely to read books in both printed and e-text form and those who defined themselves as Internet users were more likely to have recently read the news or browsed a magazine (Rainie, Zickuhr, Purcell, Madden & Brenner, 2012) even if that reading behavior was not deep in nature (Liu, 2005).

Thomas’ other reading habits are also not unique. According to a 2012 study by the Pew Internet Libraries, 80% of Americans over the age of 16 read books for pleasure,

while 78% read in order to learn about current events and 74% read as a mechanism to do research on topics they find interesting (Rainie, Zickuhr, Purcell, Madden & Brenner, 2012). Further, the report states that “technology users are uniformly more likely than non-users to be readers... that applies to internet users, cell phone owners, tablet owners, and e-book reader owners” (p.2). Reading habits also change over time. Fewer people are reading books now than they were in the 1970s (Rainie, Zickuhr, Purcell, Madden & Brenner, 2012) but the numbers are constantly in flux. Liu (2005) found that paper is still the preferred reading format, with 89.4% responding that they preferred printed media compared with 2.7% reporting they preferred electronic media or 8% saying that either format was suitable to their needs. In Thomas’ case, much of his graduate program stipend was spent on printing costs.

When it comes to the functionality he uses when reading e-texts, the answer is simple: “I hardly use any of that stuff.” While he does tend to write notes on printed articles, he does not do the same for electronic texts, unless he prints them. Describing the publications in his field as “stodgy,” he notes that much of the reason is that embedded interactivity is rarely encountered in the articles he reads aside from links to references or faculty websites. “It’s like the projection of the text, rather than being interactive” he says. In the case of faculty websites he rarely follows links to them, because he does not feel that the content will benefit his work. Value added to his work or information-seeking is what compels him to click on a link he encounters in the course of his reading. “I certainly don’t click on every link,” he said. “I will sometimes click through that, and look at it. Most often what I’ll do is right click and open it in a new tab and not look at it then but save it and go back to it later. I don’t like clicking on links

when it takes me away from the same window wherever it was, because I find that very disruptive. So, I'm in this weird position where I both really like this sort of web of content that hyperlinks can create that's really useful, I think it's far more useful than the citation because you can actually go out and look, but um, but I also find it also find it far more disruptive than the good old fashioned citation."

When it comes to the debate surrounding the potential for disruption and distraction in reading electronic text versus paper text, Thomas does wonder if he is more distracted when reading electronic text. "I wonder if it disrupts my concentration," he said. "I actually do wonder if it disrupts my concentration, because I often start things and don't finish them when I'm reading. And I know everybody is like that, right? That they time how long people stay on pages and the average is like six seconds. You can't learn anything in six seconds. But I'm not sure; it may just be that I never had much concentration. I also started a lot of books on paper and never finished them." His reading practices have changed over time, but the change has not been linear. His preferences tend to go back and forth between electronic and paper rather than from one to the other. "I go through phases where I decide that there's no need for me to print and it's an environmental hazard," he said. "And, you know, for maybe a month, I try to do everything digitally, and then I break down and decide 'you know what? I'm going to go get a cup of coffee and read this article sitting at the table,' and I'll decide that was so pleasurable that I'm no longer going to read online anymore. And that'll go away too."

Studies indicate that Thomas' fears may be well-founded, and digital reading behaviors may be influencing traditional reading behaviors as well. Liu (2005) found that "In an increasingly digital environment, readers (especially younger readers) are likely to

gradually develop the screen-based reading behavior, and to increasingly use a variety of strategies (e.g. browsing and keyword spotting) to cope with the information-abundant environment” (p.709). Stoop, Kreutzer and Kircz (2013) found that the readers tested viewed electronic readings differently than they viewed paper readings. If an electronic reading was assigned, students assumed that only the pieces that related to the assessment were important, even if the assigned material covered more. Secondly, the authors found that the readers tested physically interacted with electronic text differently, and were at times frustrated with switching between pieces of information in the electronic format. Finally, Mangen, Walgermo, and Brønnick (2013) found that readers consuming linear text such as narratives or expository prose on electronic devices had lower reading comprehension scores than those who read the same prose on paper. Their findings noted that “...we should not assume that changing the presentation format for even short texts used in reading assessments will not have a significant impact on reading performance.”

This might be a good place to note, however, that these results do not necessarily indicate that all digital reading is inherently bad. Rather, they might be interpreted in a manner that suggests how instructional design decisions might be made to allow for expository content to be printed as well as consumed on screen, depending on learner preference. Further, all distraction may not be a bad thing. Some distractions have the potential to lead to a deeper understanding of, and perhaps engagement with, the content. Take the example Thomas shares of his experience reading a traditional, paper-bound book, and how it might be different if he were to read it electronically:

Right now I’m reading a book that’s arguing um that the STEM shortage is a political construct and that there is no STEM shortage, and that it’s

just invented and that in American History, it has been invented and it's filled with sort of historical, um, it's filled with lots of detail and information, fragments of bigger stories. I'm reading it as a book. If I was reading it as an e-book, especially on my computer, I would spend a lot of time looking into the other things. When I'm reading it as text I don't do that. And it's actually not that much harder to do, right? I could put the text and the computer right next to each other and it'd be the same but for some reason when I read it as a book I don't. And this goes back to on the one hand I love that I can concentrate on the text itself and take the text for what it is, but on the other hand I'm less engaged and networked with these texts.

Teaching and Learning with Hyperlinks and Hypermedia

In his time at Midwest, Thomas has taught four face-to-face courses, and five online courses. He notes that during his job interview process he could sense there was a lot of interest in online education, and his willingness to teach online courses. "I had some mild sort of pedagogical and ideological concerns with how online education should be," he said. "But, you want to get a job, and to get a job requires online teaching. And? I really didn't have any strong objections to it, and so then when I was talking about classes I could teach it was pretty clear that some of the teaching would be online." Figure 4 illustrates the course structure he uses in his online courses. Hyperlinks and written content play a large role in Thomas' online teaching. In one course, he started with short pieces of content (2,000 words or less) that he refers to as "blog posts" for students to read, analyze, and write about. "They're a little bit longer now, but I've

basically maintained the format where I have these 13 blog posts,” he said. “They are organized thematically and clustered like they’re in groups of two to four as units. Most of the units then have a piece of writing that the students are asked to do.”

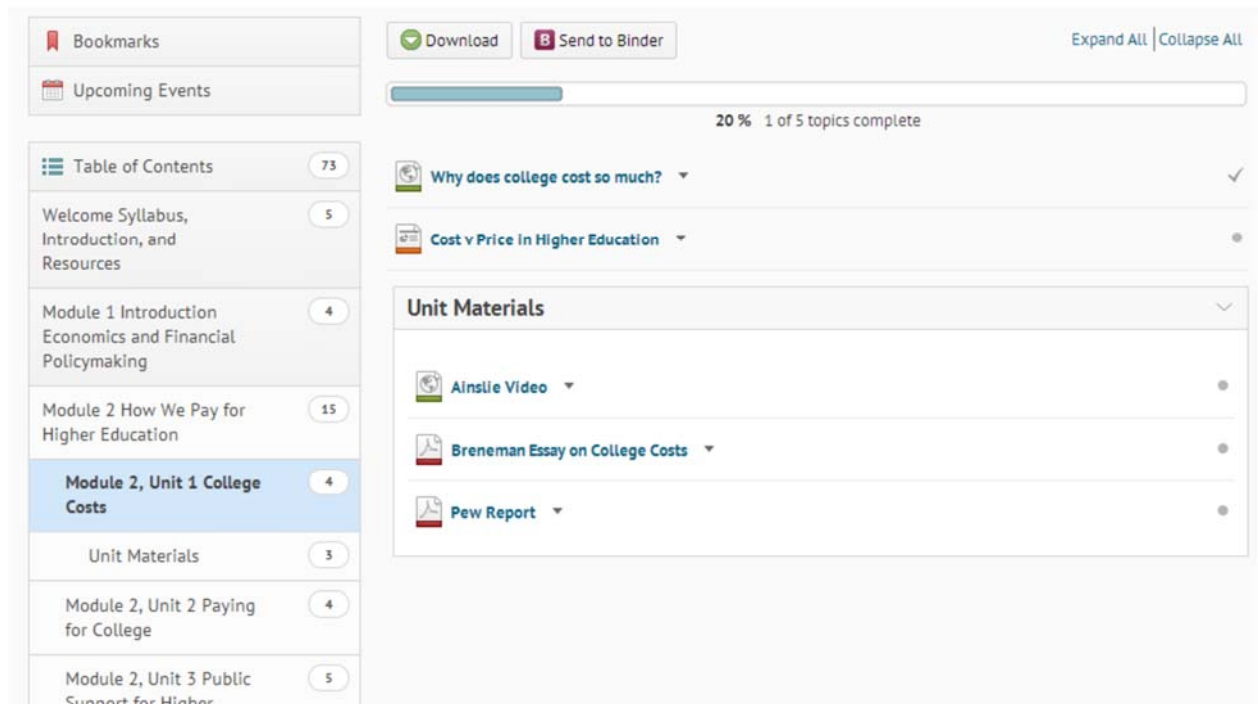


Figure 4. Course structure. This screenshot illustrates the basic course structure Thomas uses in his courses, including self-created content and external course materials.

According to Thomas, all of the blog posts he writes link frequently to other peoples’ writing (See Figure 5). For example, he links to blog posts, current news stories, radio segments, media from National Public Radio, and more. “I’m not sure that I have a specific style or technique for linking things,” he said. “So in some ways it’s just like I forgot how to do it and then I like go back and figure out how to do it again and get it done and I figured out that there are apparently many ways to do it.”

He has followed the written and linked content, with student written work assignments framework for each of the three times he has offered the course. “I’ve added

to it, but the framework is the same,” he said. The course does not focus on group work between students, rather the hyperlinks he provides serve as a means to connect students more deeply to the content itself. “They don’t have to talk to each other, they have to engage with the text,” he said. “I started to add a few videos, I did a few voice-over PowerPoints, I know that there are strengths and drawbacks to that approach, but actually in my first set of feedback, students specifically requested that I add them so I did it.”

Figure 5 illustrates a typical “blog post,” or written content article in Thomas’ budget and finance course.

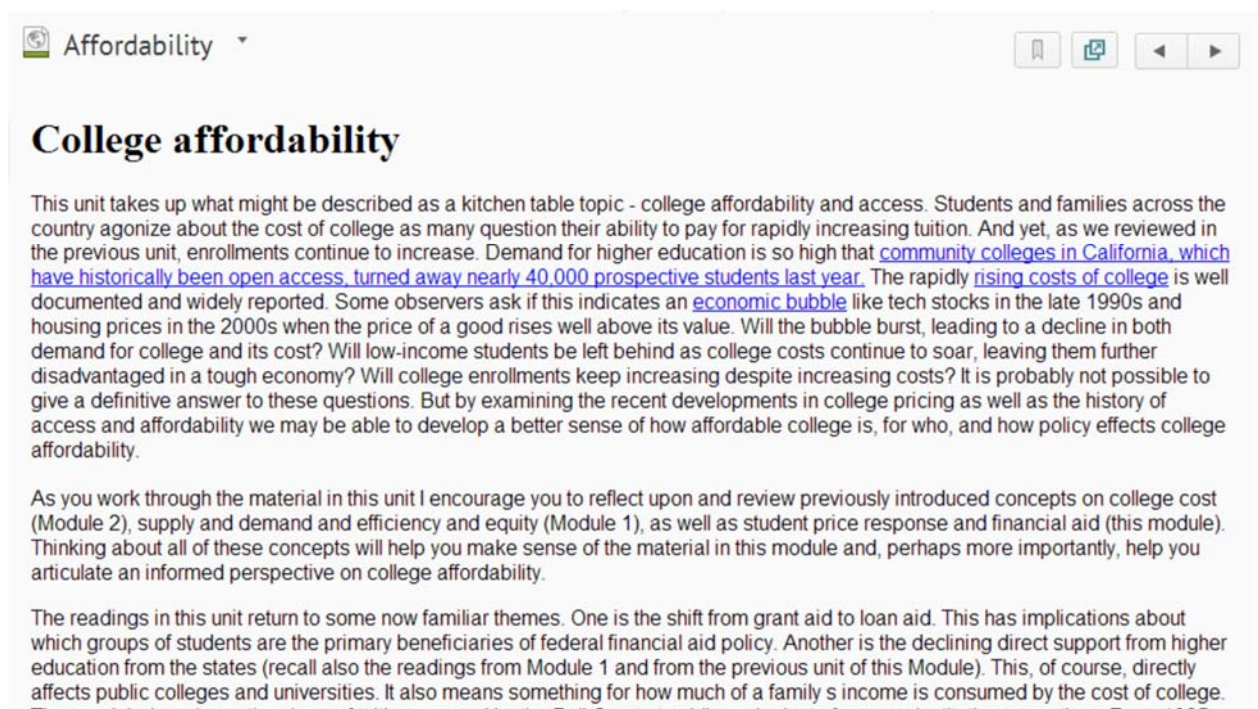


Figure 5. Hyperlink use in blog posts. This screenshot illustrates how Thomas uses hyperlinks as an enhanced course bibliography in the delivery of course content, linking to related external resources within course content.

Smith (2013) found that, while graduate students in his sample tended to indicate that they “easily learn from information” delivered in a text only format (pp. 492-493), as

a whole they found videos to be more effective mechanisms when it comes to learning and content delivery. Smith notes "...the variance in ratings was approximately 3.16 times higher for the text-only documents compared to videos by discrete topics...the finding also reveals what appears to be a considerable difference of opinion with respect to the value of text-only documents for asynchronous content delivery." The study did not investigate those differences, but Thomas' students seem to be a reflection of these perceived preferences. However, the behaviors Thomas observed in his students were more neutral. "They asked, 'can you give us some PowerPoints in addition to your writing,' and people seemed to neither like nor dislike the PowerPoints," he said. "I now receive no comments about them one way or the other."

While he does not require students to work together in groups, he does feel that content-specific dialog is an important part of the course experience. He facilitates this dialog via the e-mail function built into the learning management system. "I teach students how to send everyone in the class an e-mail using the system, and I will about once a week or every other week when I find something in *The Chronicle of Higher Education* or *New York Times* or *Wall Street Journal* or whatever is relevant to the class, I will send them a link and two or three paragraphs explaining why it's important to the class and how it connects to what we read two weeks ago or whatever," he said. Every semester, he finds that a few students model this behavior, sharing articles and their importance with their classmates. "It's not required reading, it's just if you want to participate. I try to give them optional read and share opportunities so that they share with each other."

The differences in how successful this course design and sharing framework would be for students of varying learning levels is something that Thomas is conscious of. “I am thinking about how it connects, and want them to also,” he said. “At this point, this is where I think that graduate education differs a lot from undergraduate students because it’s almost like reading and the subject is, and this is terrible, punitive for the [undergraduate] students. And, in this case, I feel like students get out of the course what they put into it and this is an opportunity for them to get more out of the class than what I provide. I mean it’s something that happens from talking to each other.”

Thomas’ concern that graduate and undergraduate students might react differently to his teaching styles is an important one. As noted in a post at Idealist.org, graduate students fare better than undergraduates in online exercises that are less structured. This may have to do with their relative age and experience, and the fact that they are not as engaged in social and intramural campus activities as undergraduates often are (Idealist.org, 2014).

Even with his graduate students, Thomas does not make the e-mail sharing required out of a desire to allow students to engage with and explore the hyperlinks and content in a way that is meaningful to them. “You know the ones who are really into it, because they really participate and reciprocate and include it in their work,” he said. “80% don’t.” The use of hyperlinks in Thomas’ teaching and learning strategy is one of choice, and of using hyperlinks to connect students to not only the content he finds important, but also to direct them toward deeper understanding and the explorations they choose to make.

When it comes to designing online courses, Thomas does not have a process, per se. He starts with the syllabus, and brainstorms the topics and assignments he thinks the

class should cover. He does some preliminary reading about the course content, selects what he considers to be “anchor texts” for what the course will cover, and organizes the course content around these texts. To do this, he writes his own hypertext content in the form of the blog posts mentioned earlier in the chapter. “You build the text, you compile it, and you rearrange it in a way that seems satisfying in terms of both the content theme, your ability to follow ideas, and ideas that complement each other and confront each other, have some conflict and tension, some complimentary stuff that creates tension, some ideas about the texts, and how the texts fit into the overall content,” he said. “So then you organize the text, you organize the assignments, and that becomes sort of the scaffolding for your online course.”

Thomas worries, to an extent, about instructors allowing online courses being “cheap versions” of face-to-face courses. The content of his online organization and development course is almost identical to the content he teaches face-to-face in different offerings of the same course. He wanted to keep the basically the same structure online, as he had seen the success the format had in face-to-face course, and respected the instructor he co-taught with. “So what I did is basically the readings are the same, the assignments are roughly the same, there are some minor modifications to them, but I changed the organization of it so that the readings are organized by weeks but they’re in units and there are six units I believe, instead of thirteen weeks,” he said. “This class had a lot of discussion, especially the face-to-face part. I got rid of the group activity as the final project except that I did have discussion forums.”

Getting rid of the group activities stems from two things: his perception of his students’ annoyance with group work online, and his perceived lack of knowledge about

managing group activity online. “I hear it is the source of a lot of discontent among students,” he said. He learned from very early experiences in online teaching and learning that participation was not something that came easy in the online environment, contrary to the teaching and learning beliefs he sees held by many. “The ideology of teaching now is that students really want to participate,” he said. “And that might be true face-to-face, but I feel like you have to offer a stick to get them to participate online in some ways. So I said listen you have to make, you have to contribute to the discussion forums, you do not have to reply to someone else’s but you do have to make a contribution and create a thread. About half the class gets into it and actually exchange, and the other half recognize this as an easy way to get 4 points, and no one complains.” When it comes to discussion forums, the literature echoes Thomas’ sentiments activity level does not necessarily lead to increased learning performance. Davies and Graf (2005) found that activity design plays a larger role in student performance than does the number of times students participated. Further, they found that students who were already considered to be high achieving tended to participate more in the discussion forum activities, shedding light on questions regarding whether discussion forum activities truly impact student learning.

Further, Thomas does not try to guide the conversation that happens in online discussion activities within his course, unless someone or something has become inappropriate. He provides his feedback to them via comments on their papers, and lets the students drive the direction each discussion takes, and the extent to which they participate. When it comes to the class discussion forums, “People who aren’t interested take a minimalist approach while people who seem to get something out of it engage it,”

he said. On their papers, however, he comments extensively. “I write lots and lots of comments,” he said. “I write back quite a lot. I have a chunk of text responding to it and that’s the way I give feedback, not in a somewhat slow moving and where everyone can see forum.” He notes that he spent more time in the discussion forums this semester engaging his students in conversation, but is unsure how useful the exercise was to either party.

Design-wise, he also used more media in his most recent course design than he had used in the past. “I used a ton of media in this one,” he said. “In part because the only feedback I got was that there was too much text. And, again, I use hyperlinks and all of that.” He also required students to read a book per unit in his most recent online course. “I think sometimes we think of online as being not book reading, but I see no reason for that,” he said. “We all read books for class, but in the classroom we don’t sit around in circles and read books together – we read at home. So, I see no reason not to assign a book.”

Thomas is unsure as to whether his online courses are as good as his face-to-face ones, but says that he’s seen great feedback and success on student evaluations. “That will change, it won’t be as good next time, as things always regress to the mean, but it’s pretty good for an online class” he said. “I think that it almost hit this mode where I feel like students give good evaluations unless you irritate them. Students who wanted to do the chat stuff had the chance, students who didn’t want to do that didn’t have to.” Thomas rates himself as “somewhere between stupid and hostile” about these chats, maintaining that he keeps them in the course because they are something that the students seem to enjoy.

Thomas finds that the act of teaching within the LMS does structure what he does and how he delivers content in a noticeable way. “How does it structure what I do – I know it does, I mean it’s obvious that it does, it provides the path for the possible,” he said. “And, it provides some sort of easy grooves for me to slide in and follow.” As with apps, Thomas says he does not go looking for problems to solve with the LMS. He does not delve into all of the features in order to take advantage of the system’s functionality, rather he explores what he needs to in order to effectively deliver course content to his students. He has encountered areas in his teaching, however, where the LMS was a hindrance to his teaching philosophy and the way he wanted to design his course. “I did not like the way the feedback function worked at all, so I got around that with e-mail,” he said. “You made comments and you were limited to very few words, so there are some assumptions involved in how you interact with your students. And the assumption was that you’re not providing very much feedback. The idea is that you should be efficient and not spend too much time on any one paper.” He sees this focus on efficiency throughout the design of the LMS, and finds that it hinders teaching and learning. He finds links more difficult to create than they should be, and he sees the business ideals of brevity and efficiency embedded throughout the LMS product. “But there are ways to get around that,” he said. “You just e-mail it. What I do is as I edit their paper I just switch the font to blue and I just type. Whatever font size they had, whatever spacing they had, I just type. And, so now in D2L when I give them back I do use the online dropbox feedback system, but in that little box I just write a note for them to see attached, and attached is the paper with the comments in the text.”

Experimentation and using fewer features of the LMS is a benefit to teaching and learning autonomy, as Thomas sees it. “Some things could structure your pedagogical practices really quick if you haven’t tried other things,” he said. “The more you use, actually, it’s more restraining because it’s more about the learning content system and less about you and your communication to the students. So, I take this semi-minimalist approach to use just the basic features, like the ability to write a lecture and post the materials for them to write and for you to write back to them... you have to have the ability to resist some.” A 2012 study of faculty using learning management systems at an urban research institution found that faculty use the resources, or content section of the learning management system most frequently (94%), followed by assignments and messages (Little-Wiles, Hundley, Worley & Bauer, 2012).

Ultimately, student learning and engagement with the content are what is most important to Thomas when it comes to course design. He tries to create a safe space for students to interact, and the design choices, including the use of hyperlinks, is intended to facilitate their exploration and analysis of the content he provides. Their engagement with each other socially is secondary, but opportunities are provided for those that find that valuable to their learning.

Learning to Teach Online

When it comes to learning new things, including the best ways to teach and incorporate hyperlinks into his online teaching, Thomas does not have a set process. “I learn by doing things,” he said. “I just try to do it and see how it goes.” He is not a person who knows about all of the latest apps that are available, or who is looking for new ways to explore the latest technologies. “I’m not... I don’t know, I don’t know what apps are

popular,” he said. “I don’t need to know. I’m not interested in finding problems to solve with technological solutions. But I’m not immune to that, so if I discover something, and I can solve it, then I’ll use it.” He does not have a philosophy, or method of evaluating the technologies he uses beyond their ability to solve a problem for himself or his students. “I’m not deliberative about it at all,” he said. “It either happens or it doesn’t happen. There must be some method by which something happens or doesn’t happen, but I don’t know what that is.”

He learned to teach online by talking to others who had done so before him. He talked to colleagues, and they showed him what they had done in their courses and found successful. His first course was one he inherited from an adjunct faculty member, and he made significant changes to it before teaching it himself. “I didn’t know how to teach online, I had never taken a class online, I had no philosophy of teaching overall, I just came out of a class as a professor that has taught face-to-face,” he said. In some cases, the courses his colleagues showed him were designed and created in a way that he felt was more intricate than he wanted to develop. “I don’t have the time or the knowledge base or the patience to build a class quite like [colleague] did, but they’re great classes,” he said. “They’re something. So, I said ‘well I can’t do this, but I can take the spirit and try to do [something similar].’”

Thomas is largely self-directed in his learning. “I know that there are a lot of people who are interested in professional development,” he said. “I’m interested in support when I need it, knowing where to find it, and I feel like I have it. I feel like professional development can be helpful, but it can also just be a narrative, like ‘you must be doing this stuff.’” When seeking resources to help him learn online teaching strategies,

however, he often reaches beyond his colleagues and uses other resources on campus including graduate students. “Yeah, a mix of self-direction, and probably rely a little too heavily on the relationships that you establish with students,” he said. “So, there was a student I knew, and I e-mailed and asked ‘can you answer this question or can you sit down with me?’ So that’s the way I solve problems.” He also uses campus resources such as the help line, but mostly he tries to figure things out on his own. “Mostly I just look at it and try to figure it out and part of my thinking is that if it takes more than like 25 minutes of poking around like Googling something or poking around in D2L, then how important, how necessary is it? And do I need to do this thing right now?” He continues, “You know, I spent forever trying to figure out how to make a PowerPoint in Camtasia, and it’s not really that easy. But I’ve got one now... and do the students really care? Does it really help? Or do they feel compelled to respond?” He notes that he now gets no comments on the PowerPoints in his course, which he sees as a sign of success because it means that students are not complaining, but he is also unsure as to their effectiveness.

While he is not always sure about how students feel about assignments, Thomas is confident in his ability to create and modify them. In self-directed learning, this is important. “The degree to which a person believes him or herself generally capable of acting agentively...will manifest itself in the intentional activities, or lack thereof of the agent” (Ponton, Carr, Schuette, & Confessore, 2010). The perceived usefulness of the resources he sought also affected whether or not Thomas would continue seeking learning opportunities. “I found students enormously helpful, I understand some campus departments are enormously helpful, but I find the college person, I don’t understand that person’s role,” he said. “That person is not very responsive. I think maybe it’s because

that person does not envision their job as providing instructional design support. But I don't go there because I've found it to be unhelpful."

Finally, in learning to teach online, Thomas has found value in the digital management of documents and readings. He finds value in the organization that digital storage provides or, more importantly, the ways in which digital storage can make up for organizational shortcomings. "The one thing that I am moving toward is 100% storage of text digitally," he said. "And here's why: it's because I'm a terrible organizer. And you can get away with that. I'm a terrible filer, some things I'm actually good at organizing some things I'm very bad at. Like filing. First, I don't enjoy spending time doing it; secondly I'm bad at it. I don't think I have a very good schema for how things should be filed. And you can get away with that on the computer, especially Macs, I think, because the search function is so good. If I forget the folder I put something in, I can start to type something in the Finder and find where I put it. So, most of my organization actually occurs in my head, and I have some idea about which documents are related to each other and how and in what context, and then I draw those texts together, almost mentally, and then just use the tools of the computer to get it when I want it rather than storing them that way."

Digital storage is not just a means of seeking information, however, it provides a schema for how he thinks about and approaches the design of publications, research, online courses and content. "Maybe I'm writing a paper, so all the readings for a paper are also right in there with the paper and my drafts," he said. "But maybe I want to read that paper again, for things like putting it in a syllabus, so when I use that, I just search for it and find it and remember it was for a paper I was writing. But I almost never read it

and put it in the right place until it goes to the class.” Thomas isn’t alone in his increasing reliance on search functionality. Nicholas Carr, author of the popular article “Is Google Making Us Stupid” and *The Shallows: How the Internet is Changing the Way We Think, Read and Remember*, feels that the Internet, and our reliance on the ability to instantly search vast quantities of data from always-on devices such as cell phones and laptop computers is fundamentally changing how our brains work. “...it's no longer terribly efficient for our brains to store information,” Carr (2011) said. “Memory should now function like a simple index, pointing us to places on the Web where we can locate the information we need at the moment we need it... As the Web teaches us to think like it does, we'll end up keeping rather little deep knowledge in our own heads.” Others disagree with Carr, saying that the Internet, with its vast data stores and linked information are actually making us smarter. “New forms of media have always caused moral panics: the printing press, newspapers, paperbacks and television were all once denounced as threats to their consumers’ brainpower and moral fiber,” said Harvard psychologist Stephen Pinker (2010, p.1). This debate has the power to shape online course design, as well as how higher education professionals think about online teaching and learning.

Teaching, Learning, and Assessment of Hyperlinks

Hyperlinks serve a number of purposes in Thomas’ courses, and he sees them as offering a number of useful purposes in his teaching. He does not see hyperlinks as strictly navigational, nor does he see them as primarily intended to build the structure of the course. He sees hyperlinks as providing a fluid experience, and as social in how they connect students to content, authors, and each other. And, he realizes, as mentioned in

DeSchryver and Spiro (2009), that students often may not know where they intend to go before they get there. “I guess it’s not navigational, actually,” he said. “Because that implies that you have a planned route. Here is the first, here is the second, here is the third. I use [hyperlinks] largely in the way that someone uses a citation. I use them similarly, almost identical, to citations. So how do they differ from citations? Well, I don’t have a hyperlink for everything we read. Like, I would if I was actually writing something for the class. I mean it’s writing for real in the class but it’s not writing... like when you’re lecturing you go to citations, and I do the same thing with links.” Figure 6 illustrates the way that Thomas tries to use multimedia, contextual, and citation links to create an interactive piece of written content for his budget and finance course.

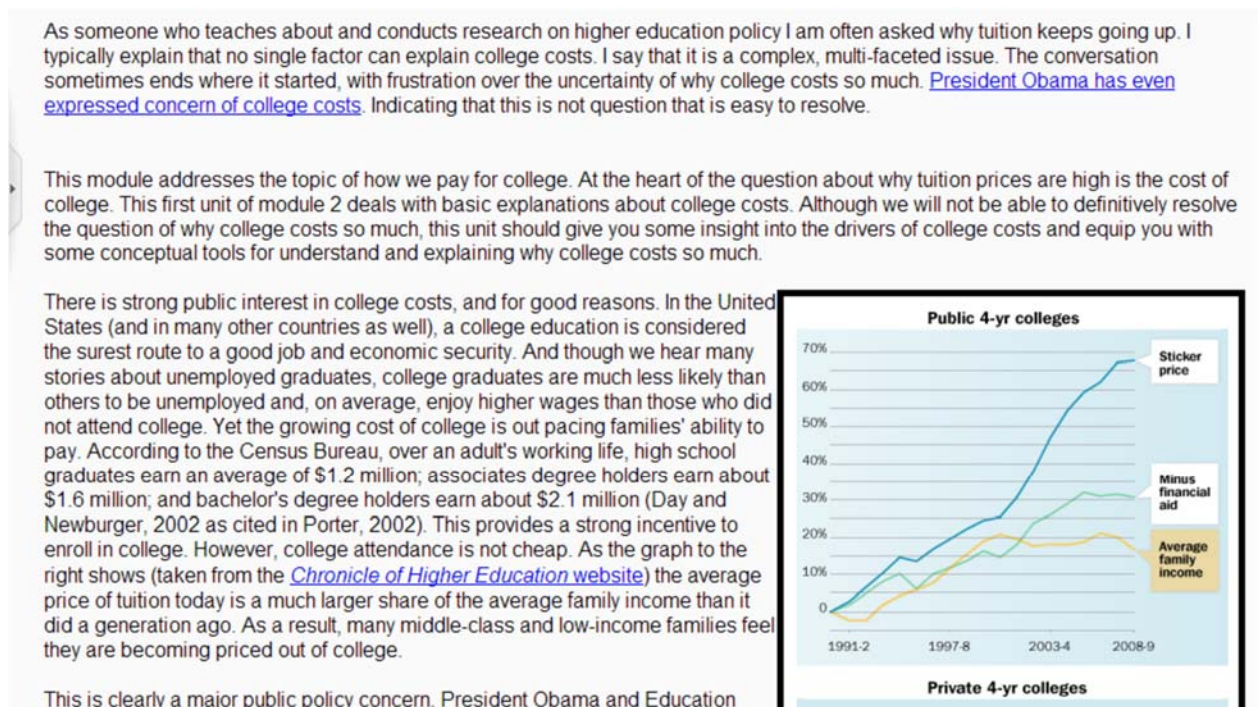


Figure 6. *Hypermedia content.* Thomas uses written text, enhancing content links, and images to create course content with the goal of engaging his students more than with text alone.

He says, “when I deal with major ideas, major areas of work, I reference that person who did it, and I provide rather than APA or Chicago style, I find an easy way to provide a link to where they can find out more information about that piece of work, or that person, as an opportunity to let a student learn more about that just like I could look up a citation when I am reading a paper.”

Students rarely ask for help on the content itself, or on navigating the hyperlinks that make up the content or the LMS that delivers it. They most frequently ask for help when something has gone wrong with the course environment, often the result of a slight misconfiguration of the LMS. “They mostly ask for help when I screw up,” he said. “They let me know when I’ve messed something up. And, most of the time, they’re too shy to say ‘you screwed up.’ You know, when you refer to someone as ‘doctor’ you don’t often follow up with, you know, ‘you screwed this up.’ So they’re like ‘I’m having a problem’ and, you know, their problem is, of course, that I messed up.” The other time students ask for help is when they don’t read the course content or syllabus closely. “The other thing where they have e-mails and have problems is when they just don’t read something,” he said. “So the problem is either mine or theirs. It’s very rarely that people actually need help navigating the LMS. It’s intuitive; they’re smart - they have iPhones, right?”

Perceptions of Student Interactions and Effectiveness

Thomas knows his students do not read every hyperlink they encounter, because he does not read every hyperlink he encounters, either. But, by using hyperlinks as a way to connect students to citations and course content, “I have a greater expectation than actually they’ll look at it than when they are reading a paper or my paper,” he said. “I

have almost no expectation that they will read my paper [in paper format], and I have very little expectation that if anyone does read my paper that they'll actually read the things I cited. I do have some expectation that the students will follow the links; and not in the sense that they'll do it for a grade, I just have the anticipation that they will."

While he makes his expectations known that he expects students to follow the links he provides in the course, Thomas also realizes that they need direction to fully appreciate the content they provide:

I don't think students know what they're looking for. In fact, I don't think they're looking for anything in particular. So I don't think I'm helping them discover something, and I don't see them as seekers. I don't think they're on some quest, some journey where they want to discover themselves and [I] need to enlighten them, nor do I think that they won't be able to pick up on knowledge and not be able to contribute. I see them as people who know less about the subject than me, who think about the subject, though, or at least have some vague interest in learning the subject, who have autonomy to learn about it by reading, who have the authority to write about it after they've read. I'm not helping them on a quest I'm facilitating their agency to read and write.

From what he has observed and read, he does think that students are able and ready to read and understand learning content presented in a hyperlinked format. "I think they're as well prepared to read in a hyperlinked format as they are prepared to read," he said. "I think that students have varying levels of preparation or desire to learn. So, some

don't know how to process the information, or talk about it, but beyond that, I don't think that hypermedia is changing their reading all that much."

Chapter 5: Mary - Hypermedia for Student Comfort

Introduction

Mary is a tenured faculty member teaching special education at Midwest University. She has been teaching online and blended courses since the first batch of courses was brought online in 2002, and is interested in technology and its role in teaching and learning. Prior to her work teaching online, Mary was a K-12 teacher, then joined the faculty at a university that had her teaching telecourses, the precursor to the web-based distance education we know today. She is an adept consumer of digital text, and reads most of her professional work, and all of her news, electronically.

A Personal History of Reading and Hyperlink Consumption

Mary is a regular reader of works that encompass work as well as pleasure. She enjoys reading for pleasure in addition to work, and wishes she could do more than she currently does due to a hectic faculty schedule. Further, she wishes she could do more reading for her professional work, but finds that rather than having the time to search for the best material possible, she is often more likely to read what is easily available. “I find myself more seduced by what’s easily available than I used to,” she said. “So, it’s an interesting pattern where I used to kind of go out and look for things... I don’t know, I feel like I sacrifice a little bit of breadth in my reading or my understanding of the breadth of work that’s being done because I will find myself focusing more on things that easily come across my desk, let’s put it that way.”

While she admits to reading that which comes directly to her most readily, the format by which Mary consumes written works varies. Most of her professional reading tends to be done electronically, while most of the reading she does in her down time takes

the form of traditional books. “I do read fiction, and there’s always a book or two by my bed and a book or two that travels with me that is more off-topic in terms of my professional life,” she said. The space she is in dictates her format choices as well. “You know, professional reading I’m more likely to do in my study, or in my office while personal reading is much more portable,” she said. While reading digital text, she reads mostly on her computer or iPad. “[Reading on an iPhone] is just too frustrating, too small, too unwieldy to sort of, you know, get at stuff...social media is fine on the phone, but no extended reading.”

Like other faculty interviewed, when it comes to things she wants to pay close attention to, or considers important to archive, Mary prints and files the information. “If it’s something that I think I want to pay more attention to, or I want to make sure that it gets in a certain sort of (not necessarily physical) file folder, but it’s something I want to make sure I don’t lose track of in the future because I think it’s important or highly relevant, I will sometimes print things off,” she said. “I have a pile of stuff that I’ve printed off because it’s more tangible. I know this is stuff I want to hold onto and use in a deeper way either now, or sometime in the future.” The sentiments regarding the tangibility of the printed word illustrate the debates that can be found throughout the literature about eText, and specifically e-books. While Gomez (2008) lauds the e-book as bound to kill the printed page, painting, through the lens of what he sees as popular opinion, computers as “perennial bad guys” (p. 20) to the book, Mike Elgan published the opposite opinion in a 2007 *Computerworld* article, claiming that e-books are bound to fail, claiming that “e-books are not, and cannot be, superior to what they are designed to replace” (p. 2).

Mary knows a little about these debates, and is conscious enough about her own reading habits to try to modify them. “I try not to be that typical person who just reads the first screen and doesn’t click on links. It really will depend, though,” she said. “You read in many different ways, and if it’s a news piece and I’m just trying to get a sense of what’s going on in the world, like the front page of the *New York Times*, then I may not click on it. So I may be operating in the skim sort of mode. Or, you know, if it’s something interesting or it feels important than I will click on the links to read more carefully, or I’ll archive it in some way so I can come back to it.”

Her concern about monitoring her distractions applies to social media as well. Mary participates in the social media platforms Twitter and Facebook, but as a consumer more than a creator. First, she worries that she has nothing interesting to say, and wonders how that would be perceived. Veletsianos and Kimmons (2012) found that, in addition to efficiency concerns, personal-professional tension such as this is something that faculty encounter when choosing to participate in social media sites. Maintaining appropriate and meaningful connections can be difficult, as can managing interactions between friends and colleagues. Secondly, for Twitter especially, social media offers distractions that compile into an overwhelming experience. “It’s too distracting,” she said. “Maybe because I haven’t used it consistently enough to know how to really monitor and control the distractions. Anything that comes on my cell phone, for example, seems to demand more immediate attention than something that comes through my screen.”

In her own learning, Mary did not encounter digital text as an undergraduate student, because it did not yet exist when she received her degree in 1976. However, as a

doctoral student, she encountered digital reading in the form of electronic library resources and articles. Her textbooks tended to take the traditional bound paper form, but she notes that “Library professional materials and articles were certainly available online... one with access and the means could read them.” Over time, Mary has found herself reading more eTexts. She does not read fiction online, but sometimes reads on her iPad. “It’s funny, but if it’s personal reading I like to have a book because books can go anywhere,” she said. “[Books] are a little more portable than electronics. I can read it in the bathtub, anywhere.”

For professional reading, electronic text is the norm for Mary. “Professionally, I rarely print things off,” she said. “It’ll be more seated, more stationary. Really interesting professional books, I will have a hard copy of that. I find it, it’s sort of judicious in what I have hard copies of.” These eTexts are read mostly on her laptop, as she finds the iPhone screen to be too small, leading to distraction and frustration. For Mary, the choices she makes regarding eTexts are dictated by the space she is in, and the purpose of the text she consumes. Her professional work sees her reading eText, while in her spare time the paper-bound book is the rule.

Teaching and Learning with Hyperlinks and Hypermedia

Mary did not have experiences with online instruction prior to teaching, aside from the electronic readings she completed in her doctoral studies. As the Internet evolved, she took advantage of early technological tools such as PLATO, and other computer assisted instructional systems, but found them to be more useful for skills-based learning than for general education. “They’d [instructional systems] be sort of well-defined skills, tutoring instructional sorts of, you know more rote learning

experiences that one could have,” she said. “And, certainly people would use those in their courses like games or whatever might be helpful online, but those were isolated sorts of experiences. They weren’t course management type packages.”

However, even without the modern learning management system, Mary was interested in online teaching and the promise that technology innovations held for her courses. Mary volunteered to be a member of the first cohort of instructors in Midwest’s first online master’s program in 2002. “Well, it was when I got hired, someone may have offered it as an incentive because at that time the Dean was paying like a little stipend to teach an online course, to develop one,” she said. “And I was interested, you know, I’m always looking for the next challenge or innovation, so I had an intrinsic interest in working with online teaching... it was the direction way back then; the direction in which things were moving.” Incentives have long been used by departments and institutions in an effort to sway faculty toward online course development (Lee, 2001; Maguire, 2005; Parker, 2003; Wolcott & Betts, 2007).

While of an innovative mindset, Mary takes a tempered approach to her experimentation with the use of hyperlinks and other technologies in her teaching, selecting only that which she can see or feel has an impact on her students’ online learning and comfort. “I think all those controversies about new technologies and what they do to our knowledge or understanding or our behavior....everything comes with advantages and challenges or problems,” she said. “[Hyperlinked] reading offers us lots of advantages but it introduces new challenges. But, you know, reading in a book is not the answer for everybody either. And, you know, it’s just with a page in a book more difficult to look up the author or the footnote and then go find what that person had to

say, where that's easier to do in digital reading." But digital reading is not ideal either, Mary has found. "It's more tempting to just read a screen in digital text, whereas maybe you'll turn more pages in a book," she said. "I don't know, there, you know everything is a compromise in life, and that's true in reading as well."

Mary finds the content writing process to be time consuming, and notes that this hasn't changed over time as other things have. "It was that way when I first taught online, and it's that way now," she said. However, while the content development takes as much time as it always has, Mary notes that the tools available have gotten better. Improved technology aside, her first online courses looked much like they do today, consisting of written content, readings and, because she teaches master's courses to students who are in the workforce, applied activities that ask students to complete tasks related to their current practice. Her readings are all online; "I haven't used textbooks for a long time," she said. The discussions and assignments in her course are, and always have been, asynchronous. "It just really seems hard when people take an online course," she said, observing that her students prefer the asynchronous format. "Their expectation is not that everyone will be able to assemble in one place. Group work is hard for students, they kind of resist that."

Learning to Teach Online

Mary's progression from the face-to-face classroom to the online space evolved over time. "I actually taught a video based course when I was at the University of Delaware, gosh it was like 20 years ago, that was really weird," she said. "But [my first] online course when I came to Midwest. That would have been about 12 years ago." Telecourses could be considered the pre-cursor to the Internet-based online distance

education we know today, in which content was delivered via television or videotapes, and assignments were mailed to the instructor for grading.

About her “unusual” time as a telecourse instructor, Mary remembers:

It was fairly unusual, you stood up in an empty lecture hall and gave lectures and they videotaped it and sent it out to students that were at remote sites. So, it actually wasn't even live in front of an audience, it could have been, but I guess at the time they knew that the course delivery, I didn't happen to be teaching that course, so to an actual audience, so I just went to a studio and talked to an empty set of chairs for you know however many sections, and they sent those tapes out to people.

You know, I mean in a way it's kind of like online learning if you do a talking head sort of format. The tapes go out, and you know there's like assignments and discussions and other things that students would do or send in, mostly by e-mail, and then, you grade them. You know?

Similarly to online education, she taught the telecourse multiple times, but only designed and delivered the content once. “I mean, it's very static once you do it, it's a big investment to change it,” she said. “So, online teaching... was [laughs] difficult in the sense that it's still the case I think that course development is very time-consuming and I do write a lot of content because I feel like, I don't know, maybe I just have the model in my head of what you do when you teach a face-to-face class, you know, you're kind of not necessarily an expert but you kind of set the stage for people, you tell them what to focus on, you know, you help guide them through the material of the course. So, I see a

need to write some content to orient people, to tell them what's important or, not tell them, but lead them to what's important.”

Where she finds difficulty is in locating pertinent help using the available tools to enhance her teaching in pedagogically beneficial ways. Having once worked with a dedicated instructional designer at Midwest several years ago, Mary did not know this was an option she had today. “I did the content and he did the interface and you know, got things in their right place, and helped structure and organize things which was very helpful because he understood what [the LMS] could do,” she said. “He knew the technical elements and he knew how you could make something happen, so now we’re kind of on our own for that. You know, now it’s actually a little bit harder because we write content and we also have to know about all that other stuff.” Even working alone, Mary did not simply stand by and muddle through. She looked around for resources that could help her, and continued teaching online. She was motivated to improve her courses and teaching, with or without institutional support. Lee (2001) found that faculty that struggle with online teaching, and with the same frustrations repeatedly, tend to lose their motivation to continue teaching or improving their course. Mary continued on, but still feels frustration with what she perceives as the state of institutional and departmental support at Midwest saying “I have done a lot of different things, and at a lot of times talked to a lot of different people. It’s unfortunate that we don’t really have the resources to help us take advantage of the pedagogical affordances that may reside within [current LMS] or any other online course management system.” Ottenbreit-Leftwich, et al (2012) found some disconnects between how teacher education programs present and discuss technology and the benefits teachers in the programs find in this information, especially

in using technology for communication, higher-order thinking, and analyzing student data. Mary's concerns with the support provided on campus, and her difficulties in locating the support that exists, may suggest an underlying reason for these disconnects.

A self-directed learner, Mary takes advantages of online professional development opportunities such as synchronous or asynchronous webinars, as well as face-to-face opportunities like the workshops offered on campus. The need for information and the desire for efficiency drive her decisions regarding when, what and how to take advantage of the online professional development opportunities she finds: "if there's something I want to know, and that's the most efficient way for me to get it, or I think that's the best way for me to get it," she will choose to participate, she said. "Or, these are people I want to learn from, or this is content that I want to learn that I can't get in another way due to geography, or timing, or efficiency." The online learning experiences Mary has had have not been full online courses or workshops, rather they have been topical. "I've never really done anything for credit, so to speak, or for a credential, online" she said. "So, I haven't really had any specific activities to do. I know that I'm supposed to do that, but it's just, you know, I haven't had an opportunity come my way that I've been interested in."

Mary learns a lot about teaching online from those around her, but realizes that their time is short as well. "[A colleague] here in our college, for example, is a great source," she said. "My colleagues who are doing things I'm curious about; I'll talk to them." Most frequently, though, when it comes to learning about incorporating new technologies or online teaching techniques, Mary turns to the web. However, efficiency is the key determinant driving her explorations. "A lot of it is that stuff you do by looking

on the web, by you know, hopping around,” she said. “I’m not one to sort of sit through Camtasia videos or sort of watch the tutorials unless they’re pretty brief.”

As an example, Mary was recently exploring a program called ThingLink, and considering it for use in her teaching. She found it to be an easy digital construction tool, and set about learning what she could about it. “So, you know, I learn about that by going to the website, by looking at examples of it, by downloading it, by playing with it myself, by creating something in it that is related to the type of work that I’m doing, and then, you know, by talking about it, showing it to other people and letting them try it, and of course looking for examples that other educators have developed, so seeing what kind of opportunities it affords by looking at the construction of other people.” This, she says, describes her typical process for learning about, and experimenting with new technologies. And, it seems typical for other education faculty as well. Robbins and Rupp-Serrano (2013) found that when it comes to finding information, faculty most frequently use personal communication such as networking with others in their department, more, even, than they turn to the Internet.

Mary also relies on virtual networking to learn, and much of this takes the form of hyperlinks and hypermedia. This, while on the Internet, might be viewed as turning to colleagues for assistance and sharing. “I belong to lots of listservs or groups, you know, I belong to a Diigo group for example, and there’s interesting stuff every day that come in a digest to my e-mail,” she said. “And I belong to the Quality Indicators in Assistive Technology group and they send a digest every day, so there are a bunch of links there where I learn something. There’s Facebook Groups where things are posted that are interesting; again, it’s kind of a passive way to learn because it’s the stuff that comes

your way. Those tend to be the stuff I learn about unless I have a very specific thing I wanted to learn about, and then I'll go out and look for specific technologies. But it's almost always by looking on the web, looking at sites, looking toward people or places that I know about or have some association with."

Finally, campus workshops and seminars provide Mary opportunities to learn more about how to teach online, but she finds that the workshops she has attended have been more focused on the tools themselves than they are on how to use the tools to teach. "You know, like when I started D2L, and wanted to learn about D2L, I'd go to those workshops that were offered," she said. "If there's something about professional competence or something that I'm interested in, I'll go to those sorts of meetings, those presentations, walk around an exhibit hall, it's just sort of what comes, what opportunities seem to be available for me to learn something that I'm interested in." She wishes, however, she could find more opportunities within the institution that would help her to be a better teacher. And, she notes, the workshops she has found and attended have not been inspirational to her, rather have focused simply on the technology itself and not what she can do with it. She finds that the information and training regarding how to improve online teaching and learning are not readily available. "I just don't know how to access those opportunities to learn how to really use digital media to teach better," she said. "To help students learn better, more, whatever it is you want to say. But, I really feel like I'm not, I'm not even close to as good a teacher as I could be in the digital environment... and that's frustrating. I think my course evaluations would bear that out. I'd like to learn, you know, how to be better at this, at the digital teaching."

Teaching, Learning, and Assessment of Hyperlinks

Mary began teaching online when Internet technologies were relatively new, and the field of online teaching and learning was just beginning to emerge. She has seen new technologies arise, and has shifted her course designs from strictly text-driven experiences to ones that incorporated hyperlinks and hypermedia, to courses with even more multimedia experiences such as video analysis and student-driven digital creation. “It was all text,” she said. “So stuff that you could read. And then, you know, e-mail. Conversations you could have by e-mail. And then we became multimedia. And then we could have images and other media. And then we could have links, and once we had those we could go places. But, I don’t know how that all emerged. But, you know, because of my age, I’ve lived through these transitions, which these are really not my progressions, but they’re me following what was available. You know, available technology, to a large extent, dictates your behavior.” For K-12 teachers, the population that Mary teaches, technology use is still not considered widely adopted, either domestically or internationally (Ertmer & Ottenbreit-Leftwich, 2010). In higher education, the numbers are higher, largely driven by online course offerings.

“That’s one thing about online learning is that it’s always changing, it’s always emergent,” Mary said. “It’s kind of hard to think about what the influences are because they’re ever-present.” When it comes to her research, Mary focuses on technology use in classrooms, and she is mindful of how this technology use supports the learning of the students she observes. She notes that these observations have a large impact on her course design decisions, and what she does when it comes to incorporating technology into her own teaching. “There’s a set of things you want your students to learn, and you want them to learn those things by consulting, you know, external sources, by sort of

having guidance from the instructor, by constructing things,” she said. “You know, I do spend, because the opportunities are there now, my courses tend to have a lot more, you know, technology-based construction opportunities, so students are creating digital archives, digital resources, digital websites. You know, whatever it is that they can create digitally.” These options were not available in the earlier days of her teaching, when text was the primary tool that was available, and creating hyperlinks and hypermedia was more difficult than it is now.

Greater availability of tools that allow for digital creation aside, Mary’s course design decisions in regard to what she has her students create is driven by the content she includes in the course. And she finds that, like John mentioned in the chapter about his teaching, she has students writing fewer papers now than she did when she first began teaching. “My students in one course do a lot of digital creation,” she said. “But you know, it’s really related to the course content in that location and the course principles, so in a lot of ways they’re just different kinds of projects than were available in 2002. Nobody writes papers anymore. That’s not really what I want my students doing. I mean my doctoral students will write a paper this summer, but that’s more because it’s a professional type of expectation that you’ll be able to write papers.” The decline of writing skills in college students is the subject of several recent articles and opinion pieces in widely-read publications (Alai, 2014; Bloomberg News, 2012; McGuire, 2014; Westin, 2013), and the focus of the blame ranges from social media to the assignment of fewer written pieces in college classrooms. However, as with other faculty interviewed in this dissertation, Mary’s focus seems to be not on the writing skills alone that her students display, rather their ability to perform tasks and analyze their outcomes.

When it comes to designing a new course, Mary has kept the same process and basic structure since she began teaching in 2002. While the technologies, ease of content building, and ideas have changed over time, her basic approach has remained steady. “I think I start personally with a sort of outline, you know, I start with a kind of big picture and what it is I think students should know in the general sense, in the sense of goals not in the sense of specific objectives and then, you know, try to see how those fit together and sort of breaking up into topics and trying to see what’s available to support those topics,” she said. “I think that kind of top-down sort of model is always dynamic because, something comes your way...accessible instructional materials is a great example... and there’s always some sort of evolution in terms of how it is that we make materials more easily accessible to students so as that, as the content, it’s not really the content, the principles are the same but as the instantiations of it change then the question does too.” So, her approach to designing an online course is also iterative. She sees the first offering of any course almost as an experiment, or as something to gather feedback from and build upon. “It’s creating something initial, and I often think that the first pass of a course is not going to be your best offering of it in an online format,” she said. “There’s a lot that you’re going to learn from that and, intentionally or not, sometimes I long for the days of standing up and talking it through. It’s a lot less preparation.”

In these experimentations and iterations, however, Mary has found herself constrained, not necessarily by technology in general, but by the design of the Learning Management Systems she has had access to. She finds herself unsure from time to time if it is the LMS that constrains her, or her lack of understanding regarding what it can do, and the potential that resides within it. She feels frustrated in her sense that she has only

other colleagues with limited time that she can turn to when it comes to examples of how courses are constructed, and what has been done with success. “I’m sure there are people doing things that are so much more amazing than I am, I have no doubt about that, but I feel kind of boxed in by what D2L does and how I can understand what it does,” she said. “So, in a sense, I design based on the box in which I live.” She realizes that the potential is there for her to design her own website, or leave the LMS behind, however, to her, the students in her course come first. “I know sometimes students find it very frustrating having to go from place to place,” she said. “My students would be very confused if they had to go to two places, like ‘Oh, I thought that was in the LMS, I didn’t know that was in Google Docs’ which, you know, even though you link and try to be clear, it seems like the preference is to have it be one-stop learning.” For these student-centered reasons, Mary tries to stick with one, centrally supported course site, and finds that as a result her design decisions are affected.

The design constraints introduced by the LMS lead to Mary selecting text as a content delivery mechanism more than she might otherwise. Her frustrations in learning how to host and share video, or have her students create video and share it, led her to choose text because “I know that just about now any text can be read by a screen reader.” She would like to use more video, and wonders if her course is more boring than it would otherwise be due to all of the text used. “Does it bother me sometimes because I’m in special ed, I’m a special educator, I’m an advocate for accessible instructional materials, and I use non-captioned video?” she asked. “Not a good idea, but there are no captioning services on campus other than if you have a student with a specific hearing impairment.

But even then the lag time is huge. Yeah, it's... but that's the nature of the field, right? It's not necessarily a criticism of it or the LMS."

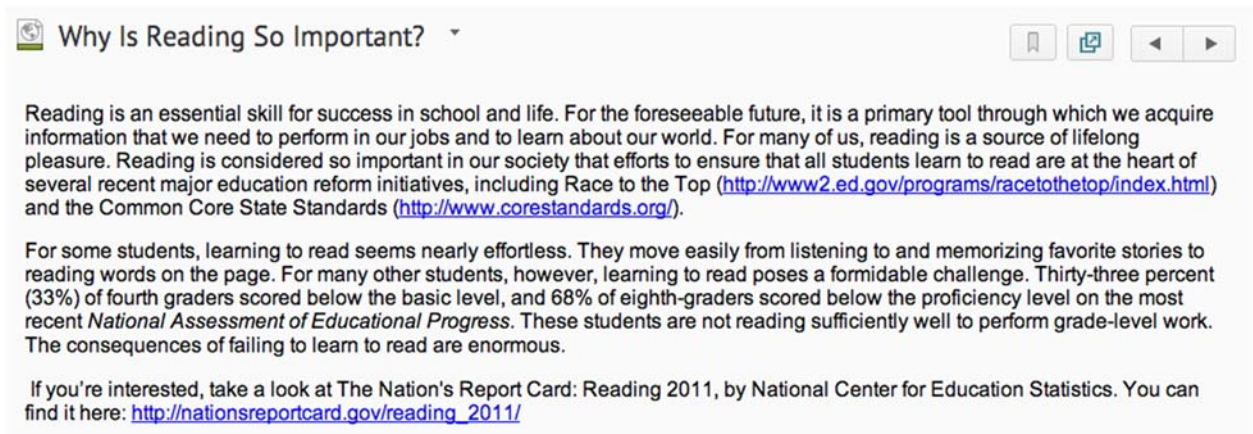
The text she creates on the LMS, and even some of the videos she uploads allow Mary to use hyperlink functionality to connect students to other websites and resources. She does not limit students' explorations, rather she uses the LMS as a hub connecting students to the content they need to succeed in the course, but serving as the primary location, and the location to which they always return. "I'm like 'Here's why you're going there, here's what I want you to learn, here's what I want you to pay attention to, here's what I want you to do,'" she said. "Yeah, I like to let students, I don't know, it is independent exploration in a sense, but there needs to be some accountability, so go explore this but then here's what you need to be able to do with your exploration. It may be a narrow view of students but they're busy people, you know?"

When it comes to the use of hyperlinks in her course design, Mary finds redundancy important. For example, "if I'm teaching about Universal Design for Learning and I write content and then I'm going to link you to the national center for UDL on a specific page there that talks about it, I'm going to link you to a video, I'm going to link you to an assessment instrument, I'm going to link you to a lesson plan or site for additional resources," she said. "So, when we're talking about UDL, here's multiple redundant, not necessarily identical, but sort of redundant information. We're special educators, we're into that sort of multi-sensory learning. I'm not talking about learning styles or different types, sort of learning aptitudes in the way that we talk about audio-visual-kinesthetic, I'm not speaking about it that way, but really in terms of redundancy, you know, learning it multiple ways. That's going to be the most beneficial.

And hyperlinks let you do that.” This example further illustrates Mary’s view of the LMS course space as a hub, allowing her to link to a variety of resources, while providing students with a central location to report to. She views everything within the LMS as linking, in addition to the links she provides that are external to the system, and reside on the Web. This viewpoint provides an interesting foundation for quantifying the hyperlinks she uses in her courses.

Teaching, Learning, and Assessment of Hyperlinks

Mary is very “opportunistic” in how she incorporates hyperlinks and hypermedia into her teaching. “I’d say there’s some general notion that links should provide additional information,” she said. “They should take someone to a richer learning experience. It would be really nice if they were in a different media than the media that you’re linking from, so it’s text let’s go look at a video. If it’s a video let’s go look at a lesson plan. Whatever the case, it’s nice to have multiple representations to linking. I don’t think there should be links to trivial stuff. But to a large extent, you know, what’s available, what’s good out there is going to be what determines sort of what I link to.” External links, bringing outside information to students, and allowing students to explore information that they find relevant to their work is a large part of the environment Mary works to create, as illustrated by the images below. Additionally, as a special educator, she works to ensure that hyperlinks are accessible, and can be read by screen reader software (see Figures 7 and 8).



Why Is Reading So Important?

Reading is an essential skill for success in school and life. For the foreseeable future, it is a primary tool through which we acquire information that we need to perform in our jobs and to learn about our world. For many of us, reading is a source of lifelong pleasure. Reading is considered so important in our society that efforts to ensure that all students learn to read are at the heart of several recent major education reform initiatives, including Race to the Top (<http://www2.ed.gov/programs/racetothetop/index.html>) and the Common Core State Standards (<http://www.corestandards.org/>).

For some students, learning to read seems nearly effortless. They move easily from listening to and memorizing favorite stories to reading words on the page. For many other students, however, learning to read poses a formidable challenge. Thirty-three percent (33%) of fourth graders scored below the basic level, and 68% of eighth-graders scored below the proficiency level on the most recent *National Assessment of Educational Progress*. These students are not reading sufficiently well to perform grade-level work. The consequences of failing to learn to read are enormous.

If you're interested, take a look at The Nation's Report Card: Reading 2011, by National Center for Education Statistics. You can find it here: http://nationreportcard.gov/reading_2011/

Figure 7. Accessible hypertext course content 1.

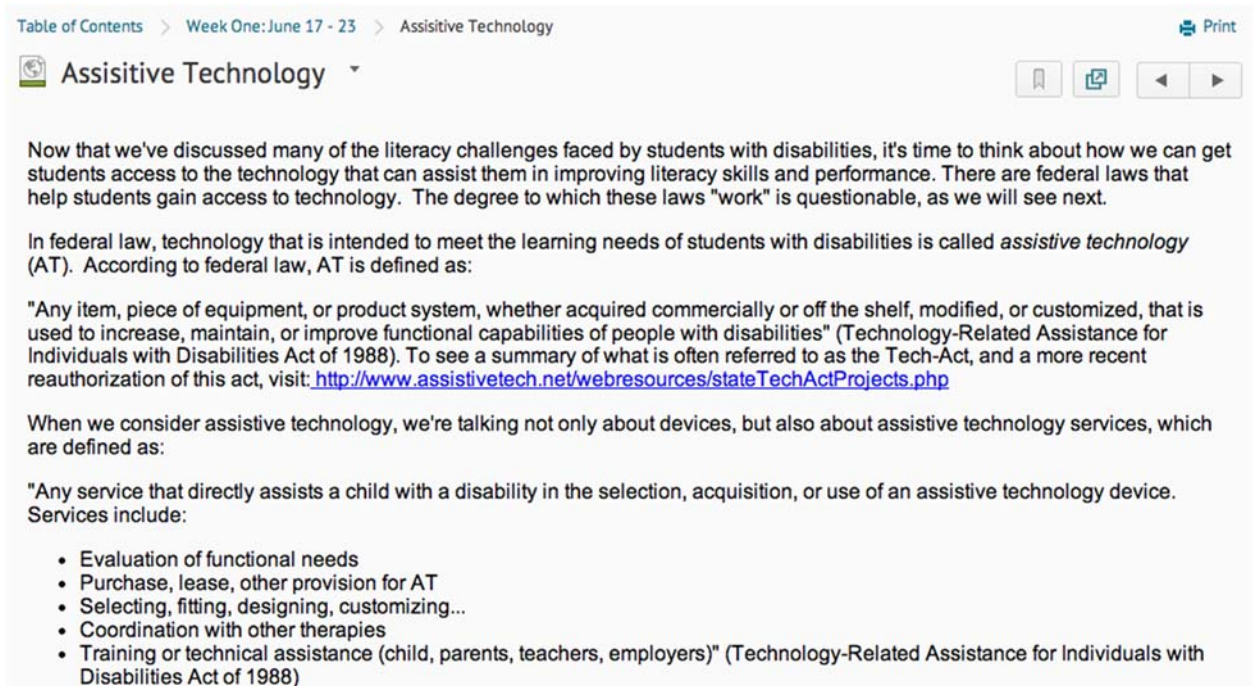


Table of Contents > Week One: June 17 - 23 > Assistive Technology

Assistive Technology

Now that we've discussed many of the literacy challenges faced by students with disabilities, it's time to think about how we can get students access to the technology that can assist them in improving literacy skills and performance. There are federal laws that help students gain access to technology. The degree to which these laws "work" is questionable, as we will see next.

In federal law, technology that is intended to meet the learning needs of students with disabilities is called *assistive technology* (AT). According to federal law, AT is defined as:

"Any item, piece of equipment, or product system, whether acquired commercially or off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of people with disabilities" (Technology-Related Assistance for Individuals with Disabilities Act of 1988). To see a summary of what is often referred to as the Tech-Act, and a more recent reauthorization of this act, visit: <http://www.assistivetech.net/webresources/stateTechActProjects.php>

When we consider assistive technology, we're talking not only about devices, but also about assistive technology services, which are defined as:

"Any service that directly assists a child with a disability in the selection, acquisition, or use of an assistive technology device. Services include:

- Evaluation of functional needs
- Purchase, lease, other provision for AT
- Selecting, fitting, designing, customizing...
- Coordination with other therapies
- Training or technical assistance (child, parents, teachers, employers)" (Technology-Related Assistance for Individuals with Disabilities Act of 1988)

Figure 8. Accessible hypertext course content 2.

Sometimes, the LMS introduces difficulties in formatting hyperlinks. For example, in some cases, like depicted in Figure 9, the hyperlinks in the text provided are evident, but not clickable. To find the content contained within these links, students would have to manually copy the website address, or URL, into their browser.

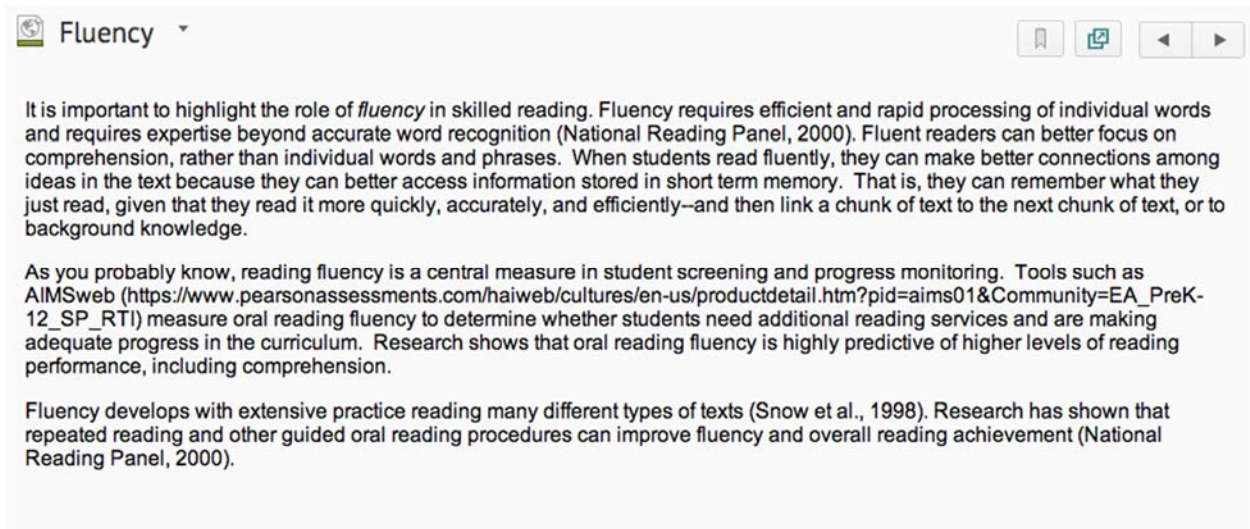


Figure 9. *Non-clickable hyperlink.* The learning management system can introduce difficulties in creating course content from time to time, as with this hyperlink that is embedded in the text, but not clickable.

As with others interviewed, links that do not work are a common source of student questions. “When there is some content that’s linked to that students don’t understand, or don’t, you know, want to know more about or have questions about, that’s kind of rare,” she said. “But, students will ask for help when they don’t work.”

Mary also ensures that her hyperlinked content is interesting, as that is what compels her to click. However, she does not have strong feelings about the design or presentation of the links in her course, though it is an idea she finds intriguing. “I have a colleague that says ‘Oh, I don’t use text-based hyperlinks, I’ll have an icon there, or I’ll have a thumbnail there. They [students] want to see a thumbnail and that’s when they’ll click,’” she said. “I’m not sure I feel that way but I think it’s a really interesting idea – how you represent that link. I don’t have any direct experience with that but in my own experience it’s the content that’s going to drive me to click on a hyperlink. I’m interested in whatever it is.” Ascough (2002), like DeSchryver and Spiro (2009), identified that

using hyperlinks of various styles and kinds was useful in designing quality online education courses, but cautioned that too many links, or too many different kinds of links could lead to information overload for students.

Mary does not feel that the functionality that hyperlinks offer in a learning space are quantified in one, or even two, ways, rather are dictated by the goals and context in and for which they are used.

I don't think that a hyperlink has one or even two purposes. I think it depends on the goals, the context. It just depends on what it is that you're doing, so, you know, if you're trying to have students engage with one another in understanding content, then a hyperlink would sort of have a social/collaborative sort of purpose. But if it's now I'm trying to get you to acquire background knowledge about this, a hyperlink's going to have to be able to enhance your knowledge. If I'm trying to get you to try this idea? The hyperlink's going to take you to... its purpose is going to be technical.

She also notes that while some students “take the primary path” to complete the assigned work with little additional exploration, others will explore the linked content, and beyond as much as they can to find additional information they can incorporate into their work.

Perceptions of Student Interactions and Effectiveness

In Mary's experience watching her students interact with hypermedia is that they need guidance, and are not always as digitally savvy as we tend to think, at least when it

comes to learning. She notes, however, that making the transition from static text to a dynamic multimedia experience that could take a number of forms depending on how the links are used is something that everyone needs some time to get used to, not just students. “I think for all of us, making that transition from static information, you know, to something that’s hyperlinked, in some ways paper to digital, digital to this sort of you know one path versus multi-path, which is hyperlinks, so you make the transition paper to digital, single-source to multiple-source, within the same document, you know, I think these are all transitions that take some getting used to.”

She also knows that a lot of students don’t look at the hyperlinks in their courses, mirroring the concern in the field of higher education regarding how to motivate students to read their textbooks. “You talk to an undergraduate class and most of them admit that they didn’t read their textbook. Unless you have an incentive for them to read it. It’s not that people aren’t necessarily intrinsically motivated, but there’s a lot competing for their attention nowadays,” she said. “Well, a lot of students don’t actually look at the hyperlinks in a course. You know that you can track what students do in a course, so I will always at the end of the semester or if students are struggling, I’ll look at what they’ve looked at in the course and what they’ve done. Again, it’s unfortunate and maybe they don’t find hyperlinks valuable, but a lot of students will sort of get through the primary content but not explore much. So, no, I think they’re advantageous for students as well. I notice there are, our master’s students sometimes much prefer to print things off, so they find hyperlinks more frustrating.”

Here, we begin to see some differences among student habits by age. While perhaps becoming less prevalent over time, according to Mary, master’s level students

tend to prefer static reading and the ability to print their articles, or even have them delivered in bulk via an electronic course pack so they do not have to click each one to download it individually. Undergraduate students, on the other hand, seem to navigate the dynamic environment more easily, but do not always use the media in the most educationally beneficial ways. For her master's students, Mary says, "even up to two years ago, some of my master's students who are teachers teaching kids had a very static notion of text. And they would say to me like 'Oh, you know, could you assemble this in a reading packet' or 'I'm not sure what you want me to read, there are like ten links on this page, what should I read?' I'm really not sure that you need me to tell you which links to click on, you know? Here's what I'd like you to know, but you can figure out your path through this. It was interesting."

For her master's students, she finds that most of them are still teaching in non-technical, traditional ways. Often, they don't have technology available in their schools and classrooms, or have to join a waiting list in order to have access to the equipment that is available. "Our master's students, I guess things will change for them but a lot of them now, they teach in pretty traditional ways," she said. "They don't even have computers in their schools, a lot of them don't. They may have an iPad that they get to use every other week with their students. So, they too teach in traditional ways and they're used to more traditional ways of teaching and learning." Further, these master's students are the ones requesting materials that can be easily downloaded and printed, preferring to read static content than dynamic, linked content. "My students have said, and it's decreasing in frequency, but there are still some students who have the tendency to want to print everything off," she said. "They want to know exactly what it is they have to read, to be

able to highlight everything, which you can do digitally, but they don't have a sense of tagging or how to sort of organize information. That'll change, I'm sure. I think our students could benefit from having to take an online class, and learning to take advantage of the opportunities that the digital environment affords."

For her undergraduate students, she says "I think it's the way students use media, and there's research to support this too, the way our young students use media is that they're very skilled at doing certain things, but they're not highly skilled at using media to support their own learning. You know, I have students sit in class and say to me 'I can't keep track of assignment deadlines' where it's like 'My God, you've been on Facebook all class long, you know, go to Google Calendar, open a new tab.'" So, Mary finds that her undergraduates, and even graduates, are adept at finding information on the web, by going to Facebook, or looking up a video game strategy, but are not necessarily adept at finding the information they can, or need to, apply to their learning. "I don't think that just by virtue, not that they're not capable, but by virtue of their experience in schools and the way they use media all the time, I'm not sure that they can use it in the best way to support their own learning in a traditional sort of university environment," she said. "Can they find out what they need to know to play World of Warcraft? Yeah, they can, and that's great, you know? But, in a more university setting we're still pretty traditional."

Mary's students at all levels also crave guidance in hyperlink navigation and use, especially when assessments are involved. "You know, students will be unclear about, students in my experience want pretty specific guidance about what they have to do that's attached to any kind of evaluation," she said. "Even if it's just a point. They're, like,

really concerned. And that's good, you know? They're concerned about putting their best foot forward and having good performance in their class. And that's a good thing. I wish -- information is dynamic, and there's so much of it, and I wish sometimes they wouldn't be so, I don't know, vocational, let's say, in their approach to using information. But it's the environment in which we're operating."

Adversity aside, Mary finds hyperlinks to be advantageous in her course design and teaching. She values the way they allow her to bring dynamic elements to her content, and to open the information web to her students in a way they are better able to process than if they were to seek the information themselves. She sees part of her job as an instructor as helping students learn how to better use digital media for learning. "I think that they're advantageous, I think sometimes we underestimate what our students bring to the course in the sense of knowing how to navigate material," she said. "I think that's true for undergraduates as well. We could teach them to be better consumers of digital media for the sake of learning. They know how to do it for social purposes."

She sees that attention spans, for her students and others, are brief here in the Internet age. Briefer, even, than they were in the days before hypermedia was so prevalent, and her design choices reflect this reality. "Oh, it's brief! It's very brief. And, you know, they're likely to bounce back and forth like we all are," she said. "You know, Facebook as a tab here, (looks at computer) I don't happen to have it here now, but I'm reading, something comes up I kind of bounce back to that, I bounce back to reading, I think people, you know, they have hyperlinked behavior. They're multitasking for sure. Attention span? For any one activity? And that's not, I don't want to say attention span,

but the amount of time they give to any one activity, they're going to bounce around.

That's true for all of us."

Chapter 6: Sue - Hypermedia as a Problematic Necessity

Introduction

A scholar of literacy and literature, Sue offers a unique perspective to this study of hyperlinked learning and behavior. A teacher for over 20 years, she has been teaching online at Midwest University since the very beginning of the online program, yet approaches technology with great skepticism. As technology upgraded, she has taught her online courses using three different learning management systems (Blackboard, ANGEL and Desire2Learn) since she developed her online presence at Midwest. She does not blog, has no social media presence, and avoids much of the content on the Internet due to a slow, rural home Internet connection. Years ago, at a conference she was attending, a fellow attendee called her a “techno peasant,” due to her lack of e-mail and Internet presence. “I would say ‘techno peasant’ stayed with me for a long time,” she said. “I did not understand technology and I still approach all of the, kind of, technology with skepticism.” Despite this skepticism and self-described difficulty in learning and incorporating new technologies, enrollment data confirms that Sue’s online courses are immensely popular with students, and campus course feedback forms reflect high levels of student satisfaction.

A Personal History of Reading and Hyperlink Consumption

Sue describes herself as a “voracious reader,” and ascribes this fact to her pursuit of a career in literacy education. She reads electronic text, but is selective in how she chooses to do so. For example, she largely follows the Carr (2008) model of reading “quick wins” online. A “quick win” in this situation would be where she logs on, quickly finds an article using a search engine like Google, gets what she needs from it, and then moves on to her next task. She does read the *New York Times* online but does not read it

as a whole publication, rather views it as a collection of headlines from which she gathers news. She takes the further step of clicking on headlines selectively, and never follows links that lead to video. “In fact, I get none of my news from visual sources,” she said. “I live in the country and have slow Internet, and so I can’t load those things without paying dearly.”

She reads long-form electronic text on her Kindle, but only for entertainment. “My professional reading is never electronic,” she said. “This includes student work. I have gotten better at reading student papers on the computer, but I still read things like dissertations on paper.” This selectivity extends to social media as well – Sue neither has a blog nor reads them, and has no social media presence. In regard to social media, she jokingly says she has “no interest in people.” There is a Facebook account for her under another name, but she has never logged into it, and allowed its creation only so her students from a study abroad cohort could “do something with pictures” from the program. These students also ran the account, and it has not been accessed since.

Sue did not have access to, or experience with, digital text as an undergraduate student as word processors and the web did not exist yet. Technology at the time, for her, was embodied in a typewriter that let her to pop out the ink cartridge and replace it with one containing corrective tape. “It was really cool at the time,” she said. “It was really cool to just be able to swap the cartridges.” When she reached graduate school, Sue saw the emergence of the first Apple computers. Her partner at the time was interested in computers and computer programming, so she found herself the owner of one of these new machines. “I guess they’d be called Macs now, but we only ever used it for word processing,” she said. “That’s all we ever did. That was in 1984.”

To Sue, “the horse is out of the barn” regarding the debate around whether e-text or printed text is superior. “I view this with some skepticism,” she said. “I’m bracing myself for what’s still to come, what I’ll have to learn and do.” She also feels that electronic books lack the tangible way-finding inherent in paper texts. “Something is missing in e-books, and I find it hard to understand the narrative arc,” she said. “With a paper book, it’s like ‘this happens and this happens and then the story is over. There’s something to be said for seeing how much farther you have to go. It gives you a sense of arc.” In some cases, she explicitly directs her students not to consume course materials in electronic formats. “I tell my students absolutely not to use the Kindle for things like picture books,” she said. In those cases the size and shape matters.” Size and shape does matter in teaching, especially of literature. The physical features of books such as size, shape, and design matter in teaching, as do publication format and technical requirements do as well. “Even small disturbances in typography, ergonomics, or word understanding can disrupt the reading process and bring the act of reading to a stop. Today’s commonly used digital equipment and software cannot compete with printed paper as a medium for sustained reading” (Hillesund & Noring, 2006, p. 2).

Wayfinding in text is a frequent theme in Sue’s work and habits. Hypertext without clear instruction for the writer’s expectations of the reader, especially in teaching and learning, can introduce higher levels of cognitive load and disorientation for readers, resulting in less effective recall and connection (Cagnoz & Altun, 2012; DeSchryver & Spiro, 2009; Fekete, 2013, Hillesund & Noring, 2006).

Sue finds difficulty moving around within electronic text, finding it easy to follow paths that she cannot easily navigate back to the starting point. “If I go follow something,

I can't always get back," she said. "So I don't know that I believe that you can't move back and forth in [an electronic text], but I can't, but that doesn't mean that others can't." Hypertext reading and navigation are deceptively complex, as they are not passive activities. Kim and Hirtle (1995) equate moving around in hypertext as analogous to moving around in a physical space. Building landmarks into hypertext as you would into a building can offer readers more tools for successful content navigation. With a physical book, a reader can see how far they've come and how far they have to go. Their landmarks are the pages they have already consumed, and the pages they still have to go. Hypertext is different, and Kim and Hirtle recommend that markers be built into hypertext to avoid the feeling of being "lost in hyperspace (1995, p. 239), thus heading off some of the frustrations that hypertext readers can experience in not being able to navigate information to find what they need (Edwards & Hardman, 1989; Dillon, 1991; McDonald & Stevenson, 1996). Modern learning management systems provide some of these markers but, as Sue illustrates in her description of getting lost in hypertext and unable to find her way back to where she started, the development of hypertext instructional content requires instructors to be aware of students' cognitive load and wayfinding abilities.

Teaching and Learning with Hyperlinks and Hypermedia

Like John, Sue was part of the first cohort of online instructors at Midwest University, circa 2004. She participated in a course offered to faculty and graduate students that involved taking a current, face-to-face course, and developing its online equivalent. Faculty and students learned together, and students were instrumental in the work that went into translating face-to-face course content into an online experience. "The idea was that it would be possible to train faculty at the same time as we were

teaching students, because the faculty had the content and we worked together to pilot some version of the course,” she said. “I saw this and knew it was the wave of the future so I volunteered. It also was very well rewarded. They gave us each a laptop and this was before we regularly got laptops, and so we had laptops, students, and support. But it was not because I had any commitment or interest in teaching online. And what I actually chose for my first course was a course that was on the books but I had never developed it beyond the classroom. So, I basically created an online version that I could throw away.”

Sue had no experience with, or exposure to online learning or professional development before teaching her first online course. “Not one bit,” she said. “I’m trying to be very clear about what I didn’t know.” Since then, she has participated in an online workshop, made up of two weeks of face-to-face instruction, followed by five weeks online. However, she didn’t really participate in the online portion of the course. “I did a little bit of workshopping online, it was mostly in discussion forums, but I just didn’t think it was worth it,” she said. Here, technical skills were not the crux of the problem, rather the high levels of activity that took place in the online course space. “We worked together, and the rest of the people wanted to talk to each other about all sorts of things,” she said. “And I had no desire to talk... it felt like figuring out what to say and how to do it was too hard. I did go back eventually and do some, but I ultimately just didn’t see the benefit.”

Learning to Teach Online

Sue refers to learning as a journey. Her journey in learning about online instruction began around 2004, in the class that collaborated with master’s students. What she struggled with most then, and continues to contend with still, is what she describes as

the “abstraction” of online teaching. She is candid about her experience and motivations, maintaining that she does not pursue online teaching as something that is important to her, rather it is something she does for her students, and to keep with modern teaching trends. “In the class with the master’s students, we tried out little things,” she said. “But the level of abstraction was hard for me...I was used to things more in terms of not weeks of the semester, but what you actually did last class, the literature you worked with. I didn’t really think about ‘what kinds of questions am I going to pose with this novel’ or ‘what am I going to ask them to do.’ I knew they were going to do a paper, but... I would just start out with ‘this is what we’re going to do’ and was able to tailor classes to what was happening or what had happened.”

Learning the planning strategies inherent in an online course offering is something that Sue has gained confidence in over time. “I just couldn’t get my brain around it,” she said. “What should a discussion look like online? Because it’s not the same as saying to your students ‘OK, you know, let’s talk about chapter 5.’ I have to think about how they should read it, how they should post it, where it should be, how to get to the place, you know, all these things that I didn’t have to think about in the regular course.” She remembers thinking about all of these logistics when she started, and though she has taught online courses for 10 years, she still focuses on them. “I couldn’t really do it at first,” she said. “But eventually I could.”

Much of Sue’s learning in regard to online pedagogy has been experiential, trial and error, or a result of working with others. She is very critical in choosing the technologies she uses in her course, learning from the experiences she has with them and adjusting for future offerings. “There are so many new things to think about,” she said.

“If you have, you know, tried out a synchronous chat, does that work better than an asynchronous chat, and why? And how to schedule them? That kind of stuff. So, I was just happy to find out that the synchronous chat did not do what I wanted it to do. There was way too much chaos, and there was always the question as to whether I could get myself organized for the conversation. That’s kind of hard, too.”

Early on, Sue was assigned a campus instructional designer to help her learn how to create and maintain her online course. “I just sat beside her for hours and told her what I wanted her to say in things like discussion boards,” she said. “It was a lot of ‘no, I want that to say that.’ I didn’t learn one thing. I would basically, like, dictate what the course should be. So, I remember when [another instructional designer] said ‘you’re going to try this on your own’ so I learned to do those basic things by myself. And I’ve taught the class many times. And I’m still here.” As time has passed, Sue’s courses and design process have remained largely unchanged, except for the learning management system they are taught from. The learning management system changes have been due to university changes in what is offered, not by choice. Additionally, all of her different courses use the same design structure. “All of my courses look virtually the same,” she said. “That ‘throw-away’ course has been immensely popular. I keep it the same because it works and it’s what I’m comfortable with.”

Sue does not seek to learn new technologies voluntarily, and does not incorporate them into her teaching without a specific need or reason. How does she learn new technologies? “I don’t,” she said. Or, I go and find somebody to help me, is the answer. And what I have discovered is that I’m very much a person who needs to have someone who is more proficient sit down and show me how to do it. It’s not enough to watch the

videos and other things. It's not enough to read the instructions. I need to have someone living, breathing beside me saying 'OK, here's where to click, here's the part of the screen you have to click on.' She hears students talk about the different technologies they must learn for their other courses, and feels that it is something she should do also. "I think that's fantastic, and I know that I should want to, but that's where it ends," she said. "I have gone to workshops and brown bags and things, but I am a very, very slow learner. I need a lot of time to figure out the technology and what it does and how to use it. Ultimately, I really think it takes too much time. I often find that the payout is not worth the many hours of time it takes for me to learn about technology. I am alarmingly unable to keep these things in my mind." Sue is not alone in struggling to understand technologies, and how to integrate them into her teaching. Peer and institutional support are critical to overcoming risk adversity in higher education faculty (Nicolle & Lou, 2008).

Learning new technologies can be an emotionally stressful undertaking. Gaining information and ideas from knowledgeable others is the format that Sue prefers, but she encounters frustration in this format as well. Social influence is a large motivating factor for faculty in incorporating the use of technology in their teaching (Lewis, Fretwell, Ryan & Parham, 2013), and Sue seeks help from her peers frequently. She finds that people respond differently to her needs, and she responds to what they are teaching her based on how well they understand her frustrations. "I think we all start out in a really good place," she said. "And then, it depends on how well they understand how lost I am, and can adjust from there. And how far I have to go. If they can't, it goes bad." She offers the example of working with the campus helpdesk. "For example, I call the helpdesk and

have some regular folks there, but sometimes I've gotten others and they have gone too fast and by the end we were both practically in tears trying to figure it out," she said. "I always struggle. But, the helpdesk did finally bring me in – they realized how lost I was, and they let me sit beside them and took me through the problem. I was happy to sit beside them and figure it all out... when we moved to D2L, there were certain people at the helpdesk that started knowing who I was, and I started knowing who they were. The others went really fast, I got kind of frustrated, and they got kind of frustrated. I finally said 'just stop, I'm not understanding this.'" Sue finds empathy on the part of the person teaching her new skills to be crucial in her ability to learn. It is important to her that those who teach her can understand how much she feels she has to learn, and can communicate clearly that which they are trying to teach. "I think that, if people understand what I don't understand, when they can remember the journey of learning about technology, and can help me slowly and clearly, then it's fine," she said. "If they can't remember that journey, then it's bad."

This is not to say that Sue's courses have remained completely unchanged in the 10 years she has taught them. She makes small changes as she finds them necessary, and takes an iterative approach to breaking down the content she delivers. "There's my process of how I have to visualize a course, which involves breaking it down, breaking it down, breaking it down, so teaching online has really changed my thinking about how I imagine a course," she said. "It's not just about a better process, it's changed my whole way of thinking about and approaching a course. And I've only designed an online course one way, but it's still very different from what I was used to with my face-to-face course. In an online course, you have to plan week by week and it's very structured. If you don't,

there's no record of what we've done... there's less spontaneity, and it's harder to reference back to what we did before.” Her face-to-face courses are more improvisational than her online courses, and she sees an art to crafting the teaching and conversation that takes place in the physical classroom. However, she does see some benefit to the online learning space. “The whole process is different,” she said. But it used to be when my students had discussions, I didn't think they'd be as good online. I don't think that's true now. I think they have very good discussions, very rich. So I don't think that that has to be necessarily different, or anything is necessarily lost. I think the online discussions are great.”

Teaching, Learning, and Assessment of Hyperlinks

When she thinks about hyperlinks, and using them in her teaching, Sue thinks about “lots and lots of choice.” She sees hyperlinks as offering an efficient delivery path to a wide variety of resources that she can use in her teaching. However, in her views on the use of hypertext in teaching, she inverts the status quo. Where others enjoy the freedom and openness of the web, she finds the open Web to be invasive and, in response, creates courses that are completely confined to the virtual walls of the campus learning management system. She does it “for the same reason she doesn't use social media,” she said. “Because I feel like the Internet is very invasive and intrusive... I use links to send out to the Web, but I don't necessarily let the Web in.” As they navigate their schedules, finding balance between academics and their personal life, some students find online course components to be similarly invasive. Smyth, Houghton, Cooney and Casey (2012) found that students have difficulty escaping Web-based learning. As the Web is a persistent presence in the life of the average American, it can be difficult for

students to find time away from the shadow of their online course work resulting in increased feelings of being tired or overwhelmed. Further, for graduate students like Sue teaches, much of their coursework is completed after a full day of work. For example, one student in the Smyth, Houghton, Cooney and Casey (2012) study said “It is so invasive... at least when you are in college you are in college and that is it. It’s college and it is done. Whereas when you come home from work... you may not spend more time, but it is in your home time.”

Hypertext can also be more mentally taxing to process than other types of text. Fekete (2013) maintains that hypertext adds layers of complexity to otherwise regular text. For example, multiple texts can be combined into a single hypertext. Also, hypertext changes how texts are referred to one another, or combined into a single reference. When it comes to how she uses hyperlinks in her teaching, Sue sees these references as a navigational tool and nothing more. She does not use them to build explorative experiences for her students and, in fact, she often finds herself wishing that students would not explore on their own before completing the work she has assigned. “In my course, I use them [hyperlinks] to get them [students] where I want them to go,” she said. “So, I send them to a site, so they can get to, like this resource or that resource. But I don’t use them to have students explore, or pursue things on their own. Then I just say ‘spend an hour finding everything you can on this topic,’ but I don’t facilitate the exploring. I find it too hard to move around, so I just send them out to do that on their own.” Landow (1991) noted that finding a link in text was indicative of a relationship between the piece of text being read and another, related and potentially significant resource. In other words, links are visual and functional cues that a relationship exists

between one text and another. In her teaching, Sue uses links as explicit instructions to her students, and each one is necessary for students to access the course materials they need in order to complete the weeks' work.

Sue's views about hyperlink use in her instruction have not changed since she began teaching online. As a matter of fact, deciding what resources to use, and creating links to content on her own is relatively new to her practice. "I thought it was sort of a mysterious thing that my producer could create something for you to click on that would take you to another place," she said. Further, she has difficulty visualizing links as anything but unidirectional. "I don't know how to leave a trail of breadcrumbs somewhere. I see links as a line, or an array, going out but not coming back. I never use them for coming back home...I see links as going from one thing to another. So, if you go from one thing to another to another to another, it's kind of, even when I link out to one thing, I'm never sure how to bring it back."

Since, to her, links are simply a means she provides for her students to navigate from one place to another, and she sees links as useful but static, she does not field questions from students who have lost their way, or are unsure how deeply to explore the path she has outlined. "If it doesn't work, that's because it's broken," she said. "The word 'explore' and 'link,' I don't even know what you mean. I don't know how to use links to get them to do that."

This self-proclaimed "primitive," one-way use of hyperlinks in her course design is something that Sue says she does differently from her colleagues, and even her students. "For one thing, they know how to find things on their own to begin with," she said. And, while she is comfortable browsing the library for the content she needs, she

does not find the same comfort on the Internet. “I even have a hard time finding basic things, like related materials. So, I don’t know how I would find some of the things that students find. For example, the YouTube videos they share. I don’t know how to search for that. I like it when students share them, but I don’t know how to find them myself.”

Sue uses built-in learning management features to link to content in her courses. Instead of composing pages on the learning management system, Sue writes the lecture content for her students, which she refers to as her weekly “journal,” in Microsoft Word, then links to the document (see Figures 10 and 11).



Figure 10. Plain text course content. Almost no hyperlinks are included in the journal content.

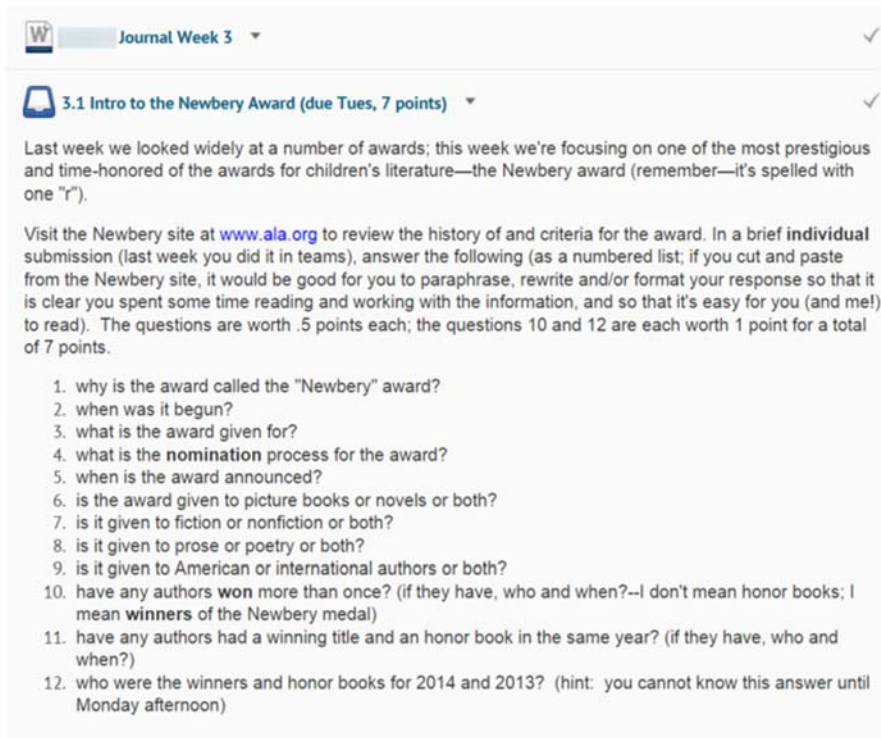


Figure 11. Hypermedia in dropbox instructions. There are few to zero hyperlinks in the primary course content, but dropboxes and assignments frequently include links that students must refer to in order to complete the assigned work.

Sue finds that, as “primitive” as they are in their use of hypermedia, her courses are effective, but always looks for new ways to make her personality evident. After she transitioned her courses to Midwest’s new learning management system, she wanted to make some changes to her course space that would make her seem warmer and more approachable. “When we switched to D2L, I knew I would struggle because I knew that it would be hard for me to learn,” she said. “So, I thought I would kind of try to be a warmer presence, more human. Especially because I was anticipating I was going to need students to be more forgiving with my technology troubles.” To achieve the warmer, more human presence that was her goal, she began making short introductory videos to open each week’s content. “I didn’t understand them, I didn’t understand the software, it

slowed me down way too much, it was just a disaster,” she said. “It would take me five hours to do one video. I would have tears, it was horrible. Actually what would happen is I would get to the week, then I’d have to make my video, but the video time was so much I would spend so much time on it that I wouldn’t have time to shower. So that was when I realized it was too much and I needed to pull back. The shower factor was really a big part of my deciding I couldn’t do it anymore... you can’t make a video with bad hair. You’d have to get all ready, then spend hours on the video.” Some of Sue’s difficulties involved making the video itself, while others involved delivering the video as course content to her students. Learning how to link to the videos she created was not intuitive to her workflow, and links often appear as captioned file names. While functional, she notes that the links as they appeared did not adhere to the warm aesthetic she was attempting to create.

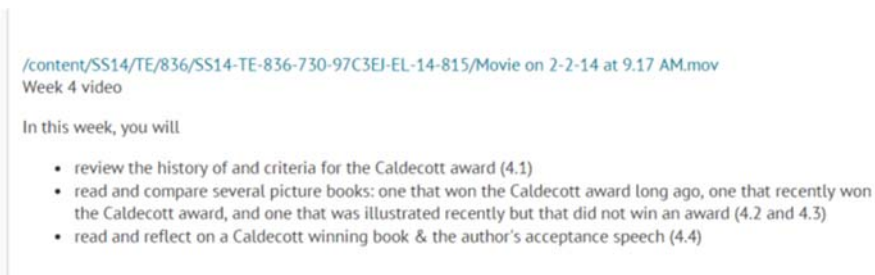


Figure 12. Learning management system hyperlink difficulties. The learning management system would rename Sue’s links and she had difficulties updating them.

The Community of Inquiry framework highlights the importance of teaching presence in an online course. Examples of teaching presence include setting the climate of an online course space, and regulating the learning that takes place there, such as content organization and providing students with direction in regard to their learning (Garrison, Anderson & Archer, 1999; Kozan & Richardson, n.d.). Much of the work

centered on the Community of Inquiry holds that teaching presence, social presence, and cognitive presence should be developed and fostered in equal parts by an instructor; that all three forms of presence are equally important to creating a whole course presence. More recent work, however, has begun to indicate that students may find one variety, or a combination of many varieties of instructor presence to be more likely to foster learning than another (Anderson, 2003; Rhode, 2009). For example, having students write and facilitate blogs may be more helpful than having them participate in asynchronous discussions, a staple in online learning design and facilitation of social presence in online courses (Rhode, 2009). Anderson (2003) finds that, while instructors and students are the primary interactors in an online course, content interaction (both student-content and professor-content) and the selection of the appropriate tools for content delivery can play a role as important as that of interaction between student and professor (Anderson, 2003).

The Community of Inquiry presences also hold different importance depending on the design of the course. Sue's courses largely follow the cognitive-behaviorist view (Anderson & Dron, 2010) that involves gaining students' attention, informing them of learning objectives, then delivering content. Cognitive-behaviorist courses were popular in the earliest days of online and distance education because they allowed for effective content delivery given the limitations of one-to-many or many-to-many communication present in the technologies that comprised the learning management systems of the time (Anderson & Dron, 2010). Despite the advance of technology in the ten years that Sue has taught online, pedagogically her courses have remained largely unchanged. She has not seen the need in her students to adopt new technologies or integrate more of the social aspects of online instruction such as social media, blogging, et cetera. She did, however,

see a gap in the warmth of her instruction, and worked to bridge it with some of the newer technologies available.

Sue's decision to start creating videos, and subsequent frustrations, stemmed from the desire to be a warmer, more supportive presence for her students. She wanted to create an online course space that felt more supportive, would let her students see her physically as well as through the written word, and was a more consistent experience for all of the students in her course. "Face-to-face, your students can see you struggle with the overhead, or hear your feedback as you speak," she said. "Online, I provide a lot of written material, and it's hard to guess how students are going to interpret that. In writing, all students don't experience things the same way. When you speak they can hear your tone but, online, written feedback is harder because when they read it, they don't know the tone you intended. So, they always think they're going to lose points, or whatever. So the environment for one student may be different than the environment for another." Joo, Lim and Kim (2011) found that strong teaching presence in online courses resulted in higher student satisfaction, success, and perceptions of course organization. However, videos are not the only way that teaching presence can be incorporated. Photographs, responses to student discussion forum posts, and facilitation of students' connection to course goals all can help learners recognize the presence of their online instructor.

Perceptions of Student Interactions and Effectiveness

Sue has seen her students become more comfortable learning online as time has passed. She feels that students are very prepared to read in an online format and has seen their comfort levels in navigating the online course space increase in the 10 years she has been teaching online. "At first when I started teaching they were more confused online," she said. "They were as mystified as I was. Now they're much more able to move around,

and they're better at it than I am." Not all students are the same when it comes to the ease of adapting to an online course environment. High achieving students tend to adapt more easily to online learning, and the requirements it places on individuals to be self-motivated with good time management skills (Xu & Jaggars, 2013). Further, Xu and Jaggars (2013) found that while older students are more likely to persist in an online course, male students, Black students, and students at the lower end of the achievement spectrum were more likely to drop an online course than their peers.

Students are, in fact, so prepared for their online courses that their explorations of the open Web can interfere with Sue's planned instruction. She prefers links as a one-way mechanism allowing her to deposit students directly to the resources she would like them to use for the instructional activities she has planned.

Sometimes things can happen and I don't like it when they are more adventurous for themselves. Sometimes what I want to have happen is for students to read a book, and look at a resource, and then come back for the discussion. So the point would be to challenge them to participate in a discussion one way, and then learn something about that later. In a classroom I can do that. I can put it together. I can have them do some work together, and say 'so now let's look at this'... but online it's frustrating because the links and the Web can intervene unintentionally. Face-to-face I can tell them "this is a book that has been really controversial" but with the Web, sometimes they go out and find stuff that I can't integrate, or I have to re-teach because they found the incorrect information. So, to me that's really frustrating because they feel like

they're doing the learning, and they are, but they may be relying on these outside resources for information, rather than the sources I want them to focus on. Sometimes, I want them to follow steps for the assignment and they've already done it. The only thing you can do is say "don't do any outside reading" but the minute you say that, it's what everyone is going to do. So I don't quite know how to control for that. It's hard for me to imagine.

So, while Sue has no problem allowing outside resources, she finds that hyperlinks can introduce unexpected deviations in her online lesson planning, causing her to have less clarity in how she integrates resources and chooses what resources to use.

Over time, Sue has seen her students' attention spans deteriorate, and she believes that online courses may be partly to blame. "Online courses have changed things," she said. "Students don't seem to want to work as hard in online courses. It used to be when you signed up for a class, you knew you were going to be there at least three hours a week, then have homework. So, this sense of time has changed. I've seen kind of a trend of acceleration and less work. Students have this idea that online courses will, sort of, liberate them from the clock. But my courses are the opposite of that. They seem to be surprised by the workload." Indeed, sometimes students are motivated to enroll in online or distance courses due to the perception that they will offer more flexibility and fit better into their lifestyle (Banyas, Gustafson & Knott, 2011; Bean & Metzner, 1985; Xu & Jagers, 2013; Picciano, 2002). Student satisfaction tends to be lower in courses that require synchronous presence, or activities without clear time limits. Sue also finds that her own attention span has also been affected by the Web and hypermedia. With the fluid

nature of the Web, focusing on one topic can be difficult, and her difficulty in finding her way back to where she started once she has followed a link all affect her ability to concentrate on the tasks and content at hand. “It’s much worse,” she said. “I think it’s part of why I get so overwhelmed.”

Chapter 7: Findings and Conclusion

Findings

By following the trajectory of faculty reading preferences and experiences learning how to teach online, this study has revealed some important things to consider for instructional designers, faculty development programs, and faculty who decide to teach online. The findings in this list are mapped to correspond to the research questions posed in this study:

Question 1. *How do faculty members' professional histories, primarily their experiences in reading (including the now often-recognized competition between print and screen) and writing shape their online teaching practices, particularly in their use of hypermedia?*

Not surprisingly, faculty have varying experience and habits in their use of hypermedia. However, in almost every case, while they may assign electronic readings for academic work, printed work is still preferred when they consume material they consider to be important. This has important implications for how they design their online courses, including the choices they make in regard to hyperlinks. How students will consume content is an important consideration for them, but the effect of hyperlinked materials are not always considered as a factor in reading and content selection.

Question 2. *What new forms of faculty learning are important in how they prepare to teach online?*

This study found that faculty are largely self-taught when it comes to the skills required in teaching online. Collegiality is important to online faculty. When learning new techniques or technologies, faculty members often turn to their colleagues first, even before contacting campus IT support.

Question 3. *What significance do they find in the role of hypermedia, and how do they use it in online course design?*

Faculty members rarely consider hypermedia explicitly in their online course design, but they commonly use it as a means of delivering online instruction. Hyperlinks are seen as potential distractions, and faculty face difficulties when encountering hypertext that is poorly designed. They design the hypermedia in their courses based on what works for them as consumers.

Question 4. *How do faculty members understand the instructional uses of hypermedia in relation to the technologically influenced emerging abilities and interests of students?*

Faculty teaching online see and embrace the exploration the Web can facilitate. However, they also see decreased attention span in their students, which they largely attribute to the Web and social media outlets. Further, they sometimes worry about privacy concerns on the Web, and its effects on their course and students. The worries about invasiveness take many forms, from worries about student privacy and violation of Family Educational Privacy Act to the observation that when students are asked to browse the Web, instructors have no control over the websites they visit or the information that those websites collect from either their Web browsers or from them directly.

All of the instructors interviewed wrestle in one way or another with hypermedia's role in their course, as well as with creating it, reading it, and navigating it. For some, the creation is the difficult part, while others struggle with student attention spans and willingness to use hypermedia to share their work via the Web. What stands

out is the lack of consistency by which faculty pursue additional learning, and how heavily their own reading preferences dictate the way they design courses for their students.

Anna, a member of the first generation to experience widespread and easily accessible distance learning, incorporates hyperlinks into her online course design process as a means to bring instructor presence and clarity to her students. She uses time management techniques to maximize efficiency, and while electronic text is an important part of her work, she often prefers printed text to electronic options. She is largely self-taught in the skills she employs teaching online, but has built and curated an extensive online personal learning network that she leverages for the additional knowledge and ideas she needs. Her workload makes it difficult for her to evaluate how students are using the links she provides, but she feels that this is an important step that she would like to take in the future, given the shorter attention spans she observes in her online students. Her thinking is innovative and, in many ways, she sees hypermedia as a way to extend her teaching beyond the learning management system that she sees as restrictive.

John's course design philosophies and practices changed as hypermedia evolved. As hypermedia became more widespread, John saw a potential solution to long-standing instructional and assessment difficulties. With hypermedia, he could create the interactive teaching and learning environment he always felt was missing from traditional educational environments, and offer his students a way to showcase their learning and take pride in their work. He leverages electronic text frequently for both reading and sharing material, and believes that the Internet has led to a distribution of knowledge that is more palatable, and more readily available to the masses. Also largely self-taught,

when John needs to learn something new, he finds an online resource or asks a colleague. He is the only one interviewed for this study who explicitly considers hypermedia and its execution in his course design process. Finally, he encourages students to experience his course as a paperless experience, and does not observe a difference in student attention spans. For him, teaching students to create hypermedia is effective because he has a tangible view of the effort students put into their work.

Thomas reads in both hypermedia and traditional text formats, and reads often. He is self-taught in the skills of online teaching, and relies on his own experimentation and the knowledge of colleagues to learn new things. In his course design process, hypermedia is a way for him to make it easier for students to get to the content that they need to successfully complete courses. He uses hypermedia as a way to direct students to exactly where he wants them to be, and sees their role in his content as a dynamic bibliography. He knows students do not read everything he posts, and makes design decisions based on what he considers to be the best fit for the content. This often means eliminating group work, as his perception is that his students dislike it and do not engage deeply in that environment. He is an electronic reader, especially of student papers, but when encountering an electronic text he considers to be important in some way, he prints it.

Mary also reads in both hypermedia and traditional text formats, and prints the items she reads and considers important. She is a technology experimenter, and enjoys trying new things. She holds memberships in professional organizations, and networks with colleagues to find new ideas and information. While she does not consider hypermedia explicitly in the design of her online courses, she sees it as a way to extend

the learning management system, using it as a hub where students report to begin following the paths of information she creates. She observes that the attention span in her students is shorter than it used to be, and finds that they crave guidance in navigating hypermedia.

Whenever possible, Sue chooses traditional print formats for both herself and her students not only for wayfinding reasons but because hypermedia can fundamentally alter the points she is trying to convey. In learning, she seeks help from a variety of places and says that she works to find people who will be patient with her technology struggles. She worked with a campus resource to design the course that she teaches, and has used the same format for her subsequent courses as she finds that it works well for her and for her students. While John is the only one interviewed for this study who explicitly considers the design of his hypermedia content, Sue considers it in that she works to avoid hypermedia whenever possible. She feels that her students are well-prepared to read in the online environment and has seen improvements over time, but also worries about how they interpret words written and consumed on the Web compared to in the traditional face-to-face classroom.

While this study focuses on hypermedia, it takes place in the context of faculty learning and online teaching. In practice, faculty learning practices are messy, with faculty seeking help in the form of that which is readily and immediately available. While some faculty had attended workshops, they transferred only that which they found useful to the way they work to their courses. Practices and perspectives remained largely unchanged, while that which was adopted fell more into the category of productivity tricks rather than changes to teaching process or philosophy.

Data gathered in the course of this study reveals parallels to Major's (2010) findings about how online teaching affects faculty work and identity. In Chapter 2, Chapter 4 and Chapter 6, faculty who "change public presentation of selves, often becoming more reserved online" (p. 2169). Instructors are purposeful about their presence on the Web and, in some cases, forego a social media presence entirely due to feelings of invasiveness. Instructors like John (Chapter 3) and Anna (Chapter 2) "feel professional rejuvenation from teaching online" (p. 2172), while others (like Sue and Mary) feel increased pressure in some ways, but teach online because they feel it is in the best interest of their students. All of the faculty interviewed found that they had to "increase structure in online courses" (p. 2175), and some do not feel that it is the best thing for their teaching, due to feelings of restraint imposed by the Web. Additionally, all of the faculty interviewed had to "assume additional responsibilities" (p. 2180), whether in the form of administrative workload or time spent learning the requisite technologies and skills their courses required. Finally, lack of time was reflected as all of the faculty reported that they "feel increased demands" (p. 2180), and "reconstruct relationships with their students" (p. 2181), when teaching online.

Baran, Correia and Thompson (2011, 2013) discuss the difficulty online instructors face in regard to the way faculty roles change online in comparison to the face-to-face classroom. This is also seen in the interviews performed in this study. Faculty who learned to teach in the face-to-face classroom approach differently changing their teaching methods as they move online, often finding ways to replicate in-person teaching strategies in the online realm. In this study, faculty did not tend to approach online course design as a way to change their teaching, or as a way to provide students

with a new experience. Here, online learning is largely a difference in delivery mechanism for the same content they teach face-to-face. While each of these instructors was student-focused and making attempts to create a learning-rich experience for the students in their courses, only Anna and John saw online teaching as an opportunity, or worked to create different environments online than were found in their face-to-face courses.

The faculty in this study all discuss how online instruction becomes more planned and structured (Baron, 2013, p. 5), and course management systems require more organization than classroom discussions (Baron, 2013, p. 5). Most, though not all, feel that something organic is lost online, and that hypermedia as they understand it is not helpful in helping replace those organic experiences. In large part, these faculty seek a means of replicating online what they have seen happen in the classroom. They wish to take in-person interactions and create a space online where they can happen in a similar way.

In 1995, the early days of teaching with multimedia, Plater (1995) observed: “Hyperlearning opens a vast array of possible interactions between teachers and learners.” He went on to ask “How do we assign faculty time to teaching under such circumstances, either as a means of reporting accountability as described by the term ‘contact hours’ or as a practical matter of supporting student learning?” (p. 24). The same questions are asked throughout the field today. 65% of faculty in a 2012 survey by the Babson Research Group reported increased workload as a result of digital communication, with 41.4% reporting increased stress (Allen & Seaman, 2012). Staying current with technologies and fielding student inquiries contribute to these increases.

Limitations and Directions for Future Research

This study is important in how it reveals how understanding hypermedia and its effects on teaching and learning are still largely elusive to faculty teaching online courses. While course management systems rely on hyperlinks for navigation, and instructors look for ways to deliver instruction to their online students, hypermedia is frequently used, but little understood. A primary limitation of this study centers on the interview sample selected. All of the faculty interviewed for this work were located in the College of Education, and therefore may have been more conscious of teaching and learning changes and differences than faculty in other departments. Future research should look at disciplinary viewpoints, and determine how they differ. A secondary limitation is that the sample, while representative of different ages, genders, backgrounds, and tenure rank, is small. This could be explained by faculty members' own perceptions of their own work in relation to the qualifying question regarding how they use hyperlinks in their work, so perhaps deploying this instrument to a wider faculty audience could further reveal how online instructors think about hypermedia in their courses.

Additional directions for future research might focus on student reading habits and perceptions of hypermedia in their online learning. For example, whether they read written content online or print it, what compels them to click on links in online courses, and how they manage their attention span as they read hypermedia. Knowing how their previous experience with reading affects their perceptions of how their online faculty include written, hyperlinked work into their courses could help build further understanding of effective content development in the field of online teaching and learning.

Further, a formalized look at the prevalence of hypermedia in online course content could prove useful in furthering understanding of how important hypermedia is as a factor to consider in the design and delivery of online courses. Hyperlink inventories and design analysis of how hyperlinks function in different courses would help build knowledge of the online course landscape as it exists today, and provide focus points for course design advice and assessment.

Hypermedia remains a cornerstone of working and learning on the Web. Indeed, its popularity grows as online learning models evolve. In the continued development of the literature and practices in the field of online learning, practitioners and academics must consider faculty along with students, not just from the perspective of technical skill, but also from the perspective of learning. Faculty comfort with Web technologies like hypermedia is critical to ensuring that students receive the best learning experiences higher education can provide.

APPENDIX

APPENDIX

Part I: A personal history of reading

First, I'd like to ask you a few questions about reading, and your history as a reader.

1. Do you have a sense of yourself as a reader? What are your habits? For example, when you're reading an article in the New York Times, do you tend to click the links? Or do you tend to focus more on the article content?
2. Do you read your news online, or do you tend to read the newspaper?
3. Are you a blog reader?
 - Which blogs?
4. Do you have your own blog?
 - Do you mind sharing the address?
5. Are you on any social media sites like Twitter?
6. Did you have any experience as a reader of digital texts as an undergraduate or graduate student?
 - Textbooks
 - Websites
 - Other?
7. Have you noticed a change over time in your reading preferences or practices?
 - More eTexts?
 - Preference for paper/printing?
 - Electronic storage and organization of files?
 - Do you read on a tablet or device?
 - If yes, do you use the Internet capabilities that are built in?

- If no, what is your opinion of e-readers and their ability to connect to the Internet?
8. Do you remember when hyperlinked reading began to surface in PDFs, the Web, etc? How did you feel about it/What was your opinion?
 9. You might know a little bit about the debate going on between screens and print. E-readers versus printed text. The quality of reading on e-readers being less or more than that of reading on printed text. Do you have an opinion or thoughts on this debate?

Part II: A personal history of online teaching and learning

Next, these questions aim to get at your experiences and thoughts about teaching, online course design, and online teaching, and learning.

10. In general, how long have you been teaching, not just online?
11. When did you teach your first online course?
12. How did that happen?
 - Did you volunteer/Were you asked to do it?
 - Did you inherit the course from someone else/Design it yourself?
13. Tell me a little about your own undergraduate and graduate education.
 - Were Internet technologies incorporated?
 - If no, what was considered technology integration?
 - [If you encountered online experiences] What types of online experiences, or activities did you encounter?
 - Simulations?
 - Scavenger hunts?

- Open explorations?
- Guided explorations?
- Other?

14. Did you have any contact with online teaching and learning before coming to teach online yourself, either in taking an online course, or working with one?

- [If yes]What did it look like?
- [If yes]What did it incorporate?
- What theories or practices do you remember? In other words, what struck you most about the course or courses?

15. [If you have] ever taken an online course or workshop:

- What was your experience interacting with the course structure?
- Did you emulate or reject any of the course design strategies you encountered?

16. When did you teach your first online course?

- Can you describe it?
 - (Interview note: ask specifically about hyperlinks/HTML here)
- What kind of activities did you include?
 - Simulations?
 - Discussion forums?
 - Group work?
 - Writing assignments?
- What other technologies did you incorporate?

17. When you want to incorporate something new into your teaching, where do you start? What's your process?
- Does this same process apply to technology? How do you learn about new technology, and decide to use it or not use it?
18. What kinds of professional development experiences have you had in relation to technology?
- Faculty development workshops?
 - Faculty learning communities?
 - Self-directed?
 - Have any of these been directly related to teaching online?
19. When you sit down to design an online course, what is your basic process? Take me through your steps.
20. How do you think about your course space in the LMS? What role do you see the LMS playing in your online instruction?
- Do you work primarily in a learning management system (LMS) or do you see your course as open to the whole Web?
 - [If closed], why?
 - [If open], how do you connect students to the web, and how do you guide their explorations? Do you try to guide them?
21. What kinds of online teaching have you done?
- Courses – Online, blended, flipped
 - Workshops?
 - For-profit institutions?

- Professional development?
- At Midwest or previous institutions? What organizations?

22. When you need or want help with technology, with online teaching, with new ideas... anything, what do you do?

- How do people respond to your questions?
 - In the department?
 - When you seek help on campus?
- Are you ever referred elsewhere?
 - On campus?
 - In the department?
 - In what situations?
- What are your biggest frustrations with seeking help?

Part III: History and perspectives about hypermedia

These questions ask a little bit about your history using hyperlinks and hypermedia, and ask you about your thoughts and perspectives about those experiences and the technology.

23. What kinds of thoughts and behaviors in teaching and learning do you associate with hypertext and hypermedia?

24. What are your expectations for teaching and learning in using hyperlinks?

- Does some of that derive from theoretical thoughts that you have about teaching?
- Does it come from experience?
- Has your thinking about how links work evolved?

- If you have colleagues who use hyperlinking, do they have different pedagogical goals from yours?

25. Could you tell me how you use links in your current course(s)?

- How do you use links to teach your students?
- How do you think links help you teach your content? How do they help you do what you want to do?

26. Some people describe links as being strictly navigational, moving people from place to place, or being more exploratory in facilitating browsers' desire to explore and learn. What is your sense of this? Do you see examples of these types of hyperlinks in what you are doing?

27. How successful do you think these links are in their intended aims and means?

- Do you think students find what they're looking for?
- Do they ask for help?
- Where do they tend to ask for help most?
- How do you guide students toward the use of links? Do you?
- How do you ensure they are doing what you want them to do?
- How do you evaluate the effectiveness of links in your course(s)? How do you know?

28. What would you do again? What would you not/never do again?

29. What kind of course atmosphere do you try to create for your students? By atmosphere, I mean emotional space. What kind of feelings or environment do you attempt to emulate or elicit? For example, do you try to create a space of

organization and efficiency? Of creativity and open thinking? Businesslike?

Brainstorming? All or some of this?

- In a face-to-face or physical classroom?
- In an online classroom?

Part IV: Perceptions of student behaviors

Now I have a few questions about what you see in your course. Your perceptions of how students interact with the hypermedia you've designed.

30. How well prepared do you think students are to read in a hyperlinked format?

31. How do you think your students interact with and use the hypermedia in your course?

- Do these behaviors reflect your intentions for them, and for the instructional decisions you made when designing your learning activities?
- Briefly, what evidence do you see that they are or are not following the paths or thought processes that you intended?

32. What is your sense of the students' attention span in your course?

- What role do you think the hyperlinks in the course play, if any?
- How do you assess that?
- How do you manage student attention span? Do you try to manage it?

33. Now that we've talked about your students' attention spans, when you look back on your history as a reader, do you have a sense of your own attention span when interacting with hypermedia?

- Do you find yourself more easily distracted when hyperlinks are present?

34. What compels you to click on a hyperlink embedded in a book, article, or instructional materials?

Part V: Summary

35. Is there anything else you would like to share about your thoughts on technology, how you learn about it, or opportunities for learning you wish you had now, or had had in the past?

36. Would it be possible for me to view some of your old course syllabi and artifacts?

37. Also, would it be possible for you to put me in one of your old courses? I am not interested in accessing student grades or data, simply looking at the course structure. If you are more comfortable, I can help you copy it into a “safe” course space where there is no student data. [If you would like, I’d love to set up a time where you could take me on a tour through the course if you’d like to tell me about your thoughts - optional.]

BIBLIOGRAPHY

BIBLIOGRAPHY

- Allen, I. E., & Seaman, J. (2014). *Grade Change: Tracking Online Education in the United States*. Needham, MA: Sloan Consortium.
- Allen, I. E., & Seaman, J. (2013). *Changing Course: Ten Years of Tracking Online Education in the United States*. Babson Survey Research Group and Quahog Research Group.
- Allen, I., & Seaman, J. (2012). *Conflicted: Faculty and Online Education 2012*. Needham, MA: Sloan Consortium.
- Allen, I. E., & Seaman, J. (2012). *Digital Faculty: Professors, Teaching and Technology, 2012*. Babson Survey Research Group.
- Allen, I. E., Survey, B., & Seaman, J. (2011). *Going the Distance – Online Education in the United States, 2011*. Needham, MA: Sloan Consortium.
- Allen, E., & Seaman, J. (2010). *Learning on Demand: Online Education in the United States 2009*. Needham, MA: Sloan Consortium.
- Amadiou, F., Tricot, A., & Mariné, C. (2009). Prior knowledge in learning from a non-linear electronic document: Disorientation and coherence of the reading sequences. *Computers in Human Behavior*, 25(2), 381–388.
- Anderson, T. (2003). Getting the Mix Right Again: An Updated and Theoretical Rationale for Interaction. *The International Review of Research in Open And Distance Learning*, 4(2). Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/149/230>
- Anderson, T., & Dron, J. (2010). Three generations of distance education pedagogy. *The International Review of Research in Open And Distance Learning*, 12(3), 80-97. Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/890/1663>.
- Aslanian, C. B., & Clinefelter, D. L. (2013). *Online College Students 2013: Comprehensive Data on Demands and Preferences*. Louisville, KY: The Learning House, Inc.
- Austin, A. E., & Sorcinelli, M. D. (2013). The future of faculty development: where are we going?. *New Directions for Teaching and Learning*, 2013(133), 85-97.
- Baldwin, R. G. (1998). Technology's impact on faculty life and work. *New Directions for Teaching and Learning*, (76), 7-21. Retrieved from <http://ezproxy.msu.edu/login?url=http://search.proquest.com/docview/62463580?>

accountid=12598.

- Banyas, P. L., Gustafson, T. M., & Knott, J. L. *Graduate Student Motivations to Learn Online*. ICELW 2011.
- Baran, E., Correia, A. P., & Thompson, A. (2011). Transforming Online Teaching Practice: Critical Analysis of the Literature on the Roles and Competencies of Online Teachers. *Distance Education*, 32(3), 421-439.
- Baran, E., Correia, A., & Thompson, A. (2013) Tracing Successful Online Teaching in Higher Education: Voices of Exemplary Online Teachers. *Teachers College Record*, 115(3). 1-41.
- Barkley, E. F. (2010). *Student engagement techniques: a handbook for college faculty*. San Francisco: Jossey-Bass.
- Baron, N. S (2013). *Mobile Media & Communication*. doi:10.1177/2050157912459739 (a)
- Baron, N. S. (2013). Redefining Reading : The Impact of Digital Communication Media. *The Changing Profession*, 128(1), 193–200. (b)
- Barr, R.B. & Tagg, J. (1995) From teaching to learning: a new paradigm for undergraduate education. *Change*, 27(6), 12-25. Retrieved October 14, 2014 from <http://www.jstor.org/stable/40165284>.
- Bean, J. P. (1985). A Conceptual Model of Nontraditional Undergraduate Student Attrition. *Review of Educational Research*. 55(4), 485-540.
- Bean, J. P., & Metzner, B. S. (1987). A Conceptual Model of Nontraditional Undergraduate Student Attrition. *Research in Higher Education*. 27(1), 15-38.
- Betts, K. (1998). *Factors Influencing Faculty Participation in Distance Education in Postsecondary Education in the United States: An Institutional Study* (Doctoral Thesis). George Washington University. Retrieved from Dissertation Archives International.
- Bevan, N. (1981). Is there an optimum speed for presenting text on a VDU? *International Journal of Man-Machine Studies*. 14(1). 59-76.
- Bischel, J. (2012). *Classroom and Instructional Technology*. Educause Center for Analysis and Research. Retrieved October 25, 2013, from <http://www.educause.edu/library/resources/classroom-and-instructional-technology>.

- Bitzer, D., Lyman, E., and Easley, J. (1965) *The Uses of PLATO: A Computer Controlled Teaching System*. Urbana, Ill., Coordinated Science Laboratory, University of Illinois, Report R-26.
- Boettcher, J. V., & Conrad, R. (2010). *The Online Teaching and Survival Guide: Simple and Practical Pedagogical Tips*. San Francisco: Jossey-Bass.
- Bowen, W. G. (2013). *Higher Education in the Digital Age*. Princeton University Press.
- Bryant, A., & Charmaz, K. (2007). *The SAGE Handbook of Grounded Theory*. Los Angeles: SAGE.
- Brügger, N. (2010). *Web History*. New York: P. Lang.
- Burbules, N. C., & Callister, T. A. (1996). Knowledge at the crossroads: some alternative futures of hypertext learning environments. *Educational Theory*, 46(1), 23–50. doi:10.1111/j.1741-5446.1996.00023.x.
- Burbules, N. C., & Callister, T. A. (2000). *Watch IT: the Risks and Promises of Information Technologies for Education*. Boulder, Colo.: Westview Press.
- Bush, V. (1945). As we may think. *The Atlantic Monthly*, 176(1), 101-108.
- Cangoz, B., & Altun, A. (2012). The effects of hypertext structure, presentation, and instruction types on perceived disorientation and recall performances. *Contemporary Educational Technology*. 3(2), 81–98.
- Carr, N. (2008). Is Google making us stupid? *The Atlantic*, 1–26.
- Carr, N. G. (2010). *The Shallows: What the Internet is doing to our brains*. New York: W.W. Norton.
- Caulfield, J. (2011). *How to Design and Teach a Hybrid Course: Achieving Student Centered Learning Through Blended Classroom, Online, and Experiential Activities*. Sterling, Va.: Stylus Publishing.
- Campbell, J. P., & Oblinger, D. G. et. al. (2007). Top-ten teaching and learning issues, 2007. *EDUCAUSE Quarterly*, 43, 15-22.
- Centra, J. (1976). *Faculty Development Practices in U.S. Colleges and Universities*. Educational Testing Service. Princeton, NJ.
- Chen, C. P., & Chen, Y. J. (2011). Evaluation of instructional technologies in cyberspace economics teaching: does the hyperlink really matter? *Atlantic Economic Journal*, 39(4), 355-368.

- Cook, D. A., & Steinert, Y. (2013). Online learning for faculty development: A review of the literature. *Medical Teacher*, 35(11), 930-937.
- Coppola, N., Hiltz, S., & Rotter, N. (2002). Becoming a virtual professor: pedagogical roles and asynchronous learning networks. *Journal of Management Information Systems*, 18(4), 169–189.
- Davies, J., & Graff, M. (2005). Performance in e-learning: online participation and student grades. *British Journal of Educational Technology*, 36(4), 657-663.
- De Maeyer, J. (2011). *How to Make Sense of Hyperlinks? An Overview of Link Studies*. OII-ICS Symposium, A Decade in Internet Time: Symposium on the Dynamics of Internet and Society, Oxford Internet Institute, Oxford, September 21–24.
- DeStefano D. & LeFevre, J. (2007). Cognitive load in hypertext reading: A review. *Computers in Human Behaviour*, 23, 1616–1641.
- Dillon, A. (1991). Readers' models of text structures: the case of academic articles. *International Journal of Man-Machine Studies*, 35(6), 913-925.
- Duderstadt, J. J. (2000). *A University for the 21st Century*. Ann Arbor: University of Michigan Press.
- Dunlap, J. C., & Lowenthal, P. R. (2009). Tweeting the night away: Using Twitter to enhance social presence. *Journal of Information Systems Education*, 20(2), 129-135.
- Easley, D., & Kleinberg, J. (2012). *Networks, Crowds, and Markets: Reasoning About a Highly Connected World*. Cambridge University Press.
- Edutechnica. (2014, September 23). *LMS Data - The First Year Update*. Retrieved from <http://edutechnica.com/2014/09/23/lms-data-the-first-year-update/>.
- Feldstein, M. (2014, October 22). *State of the US Higher Education LMS Market: 2015 Edition*. Retrieved from <http://mfeldstein.com/state-us-higher-education-lms-market-2014-edition/>.
- Garrison, D. R., Anderson, T., & Archer, W. (1999). Critical inquiry in a text-based environment: computer conferencing in higher education. *The Internet and Higher Education*. 2(2), 87-105.
- Gallant, G. (2000). Professional development for web-based teaching: overcoming innocence and resistance. In E.J. Burge (Ed.) *New Directions for Adult Learning and Continuing Education*. 67-98. San Francisco: Jossey-Bass.

- Gayle, B. M., Randall, N., Langley, L., & Preiss, R. (2013). Faculty learning processes: a model for moving from scholarly teaching to the scholarship of teaching and learning. *Teaching and Learning Inquiry: The ISSOTL Journal*, 1(1), 81-93.
- Glaser, B. G. (1998). *Doing Grounded Theory: Issues and Discussions*. Mill Valley, CA: Sociology Press.
- Gornall, L., & Salisbury, J. (2012). Compulsive working, 'hyperprofessionalism' and the unseen pleasures of academic work. *Higher Education Quarterly*, 66(2), 135-154.
- Gould, J. & Grischkowsky, N. (1986). Does visual angle of a line of characters affect reading speed? *The Journal of the Human Factors and Ergonomics Society*. 28(2). 165-173.
- Green, K. C. (2010). The 2010 Campus Computing Survey. Retrieved January 15, 2013.
- Hardman, D. M., & Edwards, L. (1989). 'Lost in Hyperspace': Cognitive mapping and navigation in a hypertext environment. *Hypertext: Theory into Practice*, 105-145.
- Hyland, N., & Kranzow, J. (2012). Faculty and student views of using digital tools to enhance self-directed learning and critical thinking. *International journal of self-directed learning*, 8(2), 11-27.
- Idealist.org. (2014). Grad: How grad school is different from undergrad. (n.d.). *idealist.org*. Retrieved May 23, 2014, from <http://www.idealists.org/info/GradEducation/Resources/Preparing/WhatChanges>.
- Haile, T. (2014). What you think you know about the web is wrong. *Time*. 183. Retrieved April 20, 2014, from <http://time.com/12933/what-you-think-you-know-about-the-web-is-wrong/>.
- Hagler, D., Kastenbaum, B., Brooks, R., Morris, B., & Saewert, K. J. (2013). Leveraging the technology du jour for overt and covert faculty development. *The Journal of Faculty Development*, 27(3), 22-29.
- Harasim, L. M. (Ed.). (1995). *Learning Networks: A Field Guide to Teaching and Learning Online*. MIT press.
- Harasim, L. (2000) Shift happens: online education as a new paradigm in learning. *The Internet and Higher Education* 3(1-2), 41-61.
- Harasim, L. (2006). A history of elearning: shift happened. In Weiss, J., Nolan, J., and Trifonas, P. (Eds.). *The Handbook of Virtual Learning Environments*, 25-60. Netherlands: Springer Press.
- Hillesund, T., & Noring, J. E. (2006). Digital libraries and the need for a universal digital

- publication format. *Journal of Electronic Publishing*, 9(2).
- Holmberg, B. (1995). The evolution of the character and practice of distance education. *Open Learning: The Journal of Open and Distance Learning*, 10(2), 47–53. doi:10.1080/0268051950100207.
- Hyperlink [Def. 1]. (2013). OED Online. *September 2013*. Oxford University Press. Retrieved November 1, 2013 from <http://www.oed.com/view/Entry/248741?rskey=fRLS6k&result=1&isAdvanced=false>.
- Jaschik, S. & Lederman, D. (2013). The 2013 Inside Higher Ed survey of faculty attitudes on technology. *Inside Higher Education*.
- Joo, Y. J., Lim, K. Y., & Kim, E. K. (2011). Online university students' satisfaction and persistence: Examining perceived level of presence, usefulness and ease of use as predictors in a structural model. *Computers & Education*, 57(2), 1654-1664.
- Kett, J. F. (1994). *The Pursuit of Knowledge Under Difficulties: From Self-Improvement to Adult Education in America, 1750-1990*. Stanford, Calif.: Stanford University Press.
- Kim, D. H. (1998). *The Link between Individual and Organizational Learning. The Strategic Management of Intellectual Capital*. Retrieved January 2, 2013, from <http://books.google.com>.
- Kim, H., & Hirtle, S. C. (1995). Spatial metaphors and disorientation in hypertext browsing. *Behaviour & Information Technology*, 14(4), 239-250.
- Kolb, D. A. (1984). *Experiential Learning: Experience as the Source of Learning and Development* (Vol. 1). Englewood Cliffs, NJ: Prentice-Hall.
- Kop, R., & Fournier, H. (2011). New dimensions to self-directed learning in an open networked learning environment. *International Journal of Self-Directed Learning*, 7(2), 2-20.
- Kozan, K., & Richardson, J. C. (2014). Interrelationships between and among social, teaching and cognitive presence. *The Internet and Higher Education*. doi:10.1016/j.iheduc.2013.10.007.
- Kukulska-Hulme, A. (2012). How should the higher education workforce adapt to advancements in technology for teaching and learning?. *The Internet and Higher Education*, 15(4), 247-254.
- Landow, G. (1989). Hypertext in literary education , criticism , hypertext and scholarship. *Computers and the Humanities*, 23(3), 173–198. Retrieved from

- <http://www.springerlink.com/index/P45356566G08R330.pdf>.
- Landow, G. P. (1991). Rhetoric of hypermedia: some rules for authors. *Hypermedia and Literary Studies*. Cambridge, MA. MIT Press. 8-104.
- Larreamendy-Joerns, J., & Leinhardt, G. (2006). Going the distance with online education. *Review of Educational Research*, 76(4), 567–605.
- Lehman, R. M., & Conceicao, S. C. (2010). *Creating a Sense of Presence in Online Teaching: How to “Be There” for Distance Learners*. San Francisco: Jossey-Bass.
- Levine, A., & Sun, J. (2002). *Barriers to Distance Education*. Washington, DC: American Council on Education.
- Little-Wiles, J. M., Hundley, S., Worley, W. L., & Bauer, E. J. (2012). Faculty Perceptions and use of a learning management system at an urban, research institution. *American Society for Engineering Education*. American Society for Engineering Education.
- Liu, Z. (1980). The changing reading habits of the American public. *Journal of Communication*, 30(1), 141-152.
- Liu, Z. (2005). Reading behavior in the digital environment: changes in reading behavior over the past ten years. *Journal of documentation*, 61(6), 700-712.
- Lorenzo, G., & Ittelson, J. (2005). An overview of e-portfolios. *Educause Learning Initiative*, 1, 1-27.
- Major, C. H. (2010). Do virtual professors dream of electric students? University faculty experiences with online distance education. *Teachers College Record*, 112(8), 2154-2208.
- Mangen, A., Walgermo, B. R., & Brønnick, K. (2013). Reading linear texts on paper versus computer screen: effects on reading comprehension. *International Journal of Educational Research*, 58, 61-68.
- Manjoo, F. (2013). You won't finish this article. *Slate Magazine*. Retrieved April 20, 2014, from http://www.slate.com/articles/technology/technology/2013/06/how_people_read_online_why_you_won_t_finish_this_article.html.
- Mayadas, F., & Miller, G.E. (2014). *Updated E-Learning Definitions*. Retrieved 11/23/2014 from <http://onlinelearningconsortium.org/updated-e-learning-definitions/>.

- McDonald, S., & Stevenson, R. J. (1996). Disorientation in hypertext: the effects of three text structures on navigation performance. *Applied Ergonomics*, 27(1), 61-68.
- McKee, C. W., Johnson, M., Ritchie, W. F., & Tew, W. M. (2013). Professional development of the faculty: past and present. *New Directions for Teaching and Learning*, 2013(133), 15-20.
- McQuiggan, C. A. (2007). The role of faculty development in online teaching's potential to question teaching beliefs and assumptions. *Online Journal of Distance Learning Administration*, 10(3).
- McShane, K. (2004). Integrating face-to-face and online teaching: academics role concept and teaching choices. *Teaching in Higher Education*, 9(1), 3-16.
- Malikowski, S. R. (2008). Factors related to breadth of use in course management systems. *The Internet and Higher Education*, 11(2), 81-86.
- Mayer, R. E. (2009). *Multimedia Learning* (2nd ed.). Cambridge: Cambridge University Press.
- Moore, M. G., & Kearsley, G. (1996). *Distance Education: A Systems View*. Belmont: Wadsworth Pub. Co.
- Moore, M. G., & Anderson, W. G. (2003). Correspondence study in the American university: a second historiographic perspective. *Handbook of Distance Education* (pp. 21-35). Mahwah, N.J.: L. Erlbaum Associates.
- Morgan, G. (2003). *Faculty Use of Course Management Systems* (Vol. 2). ECAR, EDUCAUSE Center for Applied Research.
- Morozov, E. (2013). *To Save Everything, Click Here: The Folly of Technological Solutionism*. PublicAffairs Store.
- Multimedia, adj. and n. (2013). *OED Online*. Oxford University Press. Accessed November 1, 2013 from <http://www.oed.com/view/Entry/123564?redirectedFrom=multimedia>.
- Naidu, S. (2013). Learning about learning and teaching online. *Distance Education*, 34(1), 1-3. doi:10.1080/01587919.2013.775715.
- Nicolle, P. S., & Lou, Y. (2008). Technology adoption into teaching and learning by mainstream university faculty: A mixed methodology study revealing the "how, when, why, and why not. *Journal of Educational Research*, 39(3), 235-265.
- Oblinger DG, Oblinger JL. (2005). *Educating the Net Generation*. Educause,

Washington, DC.

Oblinger, D. (Ed.). (2012). *Game Changers: Education and Information Technologies*. Educause.

Oblinger, D. (2013). Higher education in the connected age. *EDUCAUSE Review*, 48.

O'Meara, K., Terosky, A. L., & Neumann, A. (2008). Faculty careers and work lives: a professional growth perspective. *ASHE Higher Education Report*, 34(3), 1-221.

O'Meara, K., & Terosky, A. L. (2010). Engendering faculty professional growth. *Change: The Magazine of Higher Learning*, 42(6), 44-51.

Open University. (2011). *Facts & Figures 2009/2010*. Retrieved 3/21/2014 from <http://www.open.ac.uk/about/documents/about-facts-figures-0910.pdf>

Oulasvirta, A. (2004). Task demands and memory in web interaction: A levels of processing approach. *Interacting with Computers*, 16(2), 217-241.

Paquette, G. (2014). Technology-based instructional design: evolution and major trends. In J. M. Spector, M. D. Merrill, J. Elen, & M. J. Bishop (Eds.), *Handbook of Research on Educational Communications and Technology SE* - 53 (pp. 661–671 LA – English). Springer New York. doi:10.1007/978-1-4614-3185-5_53.

Picciano, A. G. (2002). Beyond student perceptions: Issues of interaction, presence, and performance in an online course. *Journal of Asynchronous learning Networks*, 6(1), 21-40.

Picciano, A. G. (2012). *Report on the Evaluation of the Alfred P. Sloan Foundation's Anytime, Anyplace Learning Program* [White paper]. New York, NY: The Sloan Consortium.

Pinker, S. (2010, June 10). Mind over mass media. *The New York Times*. Retrieved May 28, 2014, from http://www.nytimes.com/2010/06/11/opinion/11Pinker.html?_r=0.

Pittman, V. (1986) Station WSUI and the early days of instructional radio. *The Palimpsest*. March-April 1986.

Plater, W. M. (1995). Future work faculty time In the 21st century. *Change: The Magazine of Higher Learning*, 27(3), 22-33.

Ponton, M. K., Carr, P. B., Schuette, C. T., & Confessore, G. J. (2010). Self-efficacy and the learner autonomy profile. *International Journal of Self-Directed Learning*, 7(2), 54-63.

- Pullman, G., & Gu, B. (2009). *Content Management: Bridging the Gap Between Theory and Practice*. Amityville, N.Y.: Baywood Pub. Co.
- Rainie, H., Zickuhr, K., Purcell, K., Madden, M., & Brenner, J. (2012). *The Rise of E-Reading*. Pew Internet & American Life Project.
- Renes, S. L., & Strange, A. T. (2011). Using technology to enhance higher education. *Innovative Higher Education*, 36(3), 203-213.
- Rheingold, H. (2012). *Net Smart: How to Thrive Online*. Cambridge, MA: MIT Press.
- Rhode, J. F. (2009). Interaction Equivalency in Self-Paced Online Learning Environments: An Exploration of Learner Preferences. *International Review of Research In Open & Distance Learning*, 10(1), 1-23.
- Salvatori, M. R., & Donahue, P. (2005). *The elements (and pleasures) of difficulty*. New York: Pearson Longman.
- Schlosser, L. A., & Simonson, M. R. (2009). *Distance Education: Definitions and Glossary of Terms*. IAP.
- Seaman, J. (2009). *Online Learning as a Strategic Asset: Volume II: The Paradox of Faculty Voices: Views and Experiences with Online Learning. ... Review of Research in Open and Distance Learning*. Babson Park, MA. Retrieved from <http://www.irrodl.org/index.php/irrodl/article/viewArticle/796/1437>.
- Selingo, J. J. (2013). *College (Un)bound: The Future of Higher Education and What it Means for Students*. Houghton Mifflin Harcourt.
- Shepperd, J. A., Grace, J. L., & Koch, E. J. (2008). Evaluating the electronic textbook: is it time to dispense with the paper text?. *Teaching of Psychology*, 35(1), 2-5.
- Simonson, M., Smaldino, S., Albright, M., & Zvacek, S. (2000). *Teaching and Learning at a Distance: Foundations of Distance Education* Merrill/Prentice Hall.
- Smith, D. W. (2013). Listening to the learner: Graduate teacher education students' preferences for asynchronous content delivery. *Journal of Online Learning & Teaching*, 9(4).
- Smith, J. A. (Ed.). (2007). *Qualitative Psychology: A Practical Guide to Research Methods*. Sage.
- Smith, R. M. (2008). *Conquering the Content: A Step-by-Step Guide to Online Course Design*. San Francisco: Jossey-Bass.
- Smyth, S., Houghton, C., Cooney, A., & Casey, D. (2012). Students' experiences of

- blended learning across a range of postgraduate programmes. *Nurse Education Today*, 32(4), 464-468.
- Sorcinelli, M., Austin, A., Eddy, P., & Beach, A.L. (2006). *Creating the Future of Faculty Development: Learning From the Past, Understanding the Present*. San Francisco: Anker Publishing.
- Spiro, R., & DeSchryver, M. (2009). New forms of deep learning on the web. *Cognitive Effects of Multimedia Learning* (pp. 134–152).
- Stavredes, T. (2011). *Effective Online Teaching: Foundations and Strategies for Student Success*. San Francisco, CA: Jossey-Bass.
- Stoop, J., Kreutzer, P., & Kircz, J. G. (2013). Reading and learning from screens versus print: a study in changing habits part 1. Reading long information rich texts. *New Library World*, 114(7/8), 3-3.
- Swan, K. (2004). *Relationships between Interactions and Learning in Online Environments*. The Sloan Consortium.
- Tabata, L. N., & Johnsrud, L. K. (2008). The impact of faculty attitudes toward technology, distance education, and innovation. *Research in Higher Education*, 49(7), 625-646.
- Thormann, J., & Zimmerman, I. K. (2012). *The Complete Step-by-Step Guide to Designing and Teaching Online Courses*. New York, NY: Teachers College Press.
- Tierney, William G. (2008). *The Impact of Culture on Organizational Decision Making: Theory and Practice in Higher Education*. Sterling, VA: Stylus Pub LLC.
- Unz, D. C., & Hesse, F. W. (1999). The Use of Hypertext for Learning. *Journal of Educational Computing Research*, 20(3), 279–295. doi:10.2190/FB08-5H94-3R3Y-KQLY.
- Unwin and McAleese (Eds.). (1998). *The Encyclopedia of Educational Media Communications and Technology*. New York: Greenwood Press.
- Urakami, J., & Krems, J. F. (2011). How hypertext reading sequences affect understanding of causal and temporal relations in story comprehension. *Instructional Science*, 40(2), 277–295.
- Vai, M., & Sosulski, K. (2011). *Essentials of Online Course Design: A Standards-Based Guide*. New York: Routledge.
- Vörös, Z., Rouet, J.-F., & Pléh, C. (2011). Effect of high-level content organizers on

- hypertext learning. *Computers in Human Behavior*, 27(5), 2047–2055.
- Waniek, J., & Ewald, K. (2008). Cognitive costs of navigation aids in hypermedia learning. *Journal of Educational Computing Research*, 39(2), 185–204.
- Wedemeyer, C. Najem, C. (1969). *AIM: From Concept to Reality. The Articulated Instructional Media Program at Wisconsin*. Syracuse University: Center for the Study of Liberal Education for Adults.
- West, R. E., Waddoups, G., & Graham, C. R. (2007). Understanding the experiences of instructors as they adopt a course management system. *Educational Technology Research and Development*, 55(1), 1-26.
- Woody, W. D., Daniel, D. B., & Baker, C. A. (2010). E-books or textbooks: students prefer textbooks. *Computers & Education*, 55(3), 945-948.
- Xu, D., & Jaggars, S. (2013). Adaptability to Online Learning: Differences Across Types of Students and Academic Subject Areas. Columbia University. Retrieved 8/16/2014 from <http://academiccommons.columbia.edu/catalog/ac:157286>.
- Yelon, S., Sheppard, L., Sleight, D., & Ford, J. K. (2004). Intention to transfer: how do autonomous professionals become motivated to use new ideas? *Performance Improvement Quarterly*, 17(2), 82-103.