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Examining the Usability of Content in Canvas: HTML vs. PDF

by

Danni Noyes

**Capstone submitted in partial fulfillment of
the requirements for graduation with**

UNIVERSITY HONORS

with a major in

**English: Professional and Technical Writing
in the Department of English**

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Spring 2019

Abstract

The mission statement of Utah State University (USU) includes “serving the public through learning, discovery and engagement.” In order to engage the diverse 27,932 students (Fall 2018 headcount including regional campuses), USU produces accessible content. Although accessible content is available to USU’s students, it is presented as an alternative to the original product rather than as a product itself. Thus, students must seek out this alternative, accessible content in order to engage with it. This pilot study indicates that content in Canvas should be made accessible from the beginning of its creation as is specified by the Theories of Universal Design. This pilot study researched if these Universal Design Theories are true in the context of inaccessible Portable Document Format (PDF) files vs more accessible Hypertext Markup Language (HTML) content files.

The research was conducted in two parts: an online survey and a literature review. For the online survey, student participants (a pool of USU students) were shown two excerpts, one as a PDF file and the other as an HTML file, and asked a series of questions about their experience reading the two formats. The literature review discusses Theories of Universal Design, which argue that products should be designed for maximum usability regarding everyone, despite differing ability levels. In other words, products designed for people with disabilities are overall better for everyone. The results of this study indicate that HTML content is both preferred and more usable compared to PDF files and that it would be advantageous to conduct further research regarding this topic.

Acknowledgements

I would like to thank Dr. Jared Colton, CIDI's Christopher Phillips, Dr. Keri Holt, and the entirety of the University Honors Program for their support and encouragement in the completion of this research. This study could not have been conducted without their guidance and advice. I would also like to thank the professors of the Technical Communication program for teaching me about audience, accessibility, usability, and social justice. Without them, I would not have been inspired to conduct this study.

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Introduction

The mission statement of Utah State University (USU) includes “serving the public through learning, discovery and engagement” (“Mission Statement”). In order to engage the diverse 27,932 students (Fall 2018 headcount including all regional campuses) who attend Utah State University, the Center for Innovative Design and Instruction, also known as CIDI, “helps university instructors create and maintain high quality learning environments” (“CIDI’s Mission Statement”). The creation and maintenance of these high quality learning environments includes producing usable and accessible content and making that content available to students through Canvas courses.

Making usable and accessible content at a university is challenging because of the many factors that go into making the content. One of the challenges of making usable and accessible content at a university is the inconsistency of document formats that instructors use for their courses. Because instructors plan their own courses, they search for, create, and place their own content in Canvas. This means that there is not a consistent format that instructors are required or expected to follow, especially considering their courses expand across multiple disciplines. These disciplines have their own preferred formatting in terms of instruction that the instructors follow.

When instructors do use the same document format as each other, the format itself may be inconsistent. This consistency differs depending on which format the instructors are using. For example, HTML files can be created with or without tags, which will be discussed more in-depth later, and/or with or without Cascading Style Sheets (CSS). PDF files can be created by taking and uploading a picture of a page in a book and/or by taking a screenshot of the information on a computer screen. These PDF files can be cleaned up by heightening their

resolution or running them through an image-editing software, such as Photoshop and/or GIMP.

A way to solve the inconsistency of how content is formatted and presented in Canvas is to provide trainings that teach instructors how best to create and distribute the content.

Training the instructors, however, is another challenge in and of itself. In order to host these trainings, the universities have to provide experts to teach the instructors on how to create the content, set up the necessary equipment for the training, and arrange a time that works both for the experts to provide the training and for the instructors to attend the training. As there are many departments with multiple instructors who all teach classes at varying times, there would most likely need to be multiple trainings. Besides having to organize a time, or times, for instructors to attend the trainings, asking the instructors to learn this new information adds another task to their already busy schedules. These trainings would not only become additional trainings for the instructors, but if the instructors are not already familiar with the process and software used for implementing this content, they would have to learn new skills as well. As instructors already have extremely busy schedules, requiring these trainings would be asking a lot of them. Finally, if a training like this can be done, it is also difficult to know which format, HTML content or PDF files, the instructors should be trained to create and/or use in their courses.

My research is situated in the context of this question: which format should course content be formatted as in Canvas? Should the content be formatted as HTML content or as PDF files? As I will be advocating for more consistent accessibility practices in Canvas, I wanted to acknowledge the constraints of such a project. These constraints are largely the reason(s) as to why research regarding this topic has been theoretically based, rather than empirically based. However, providing usable and accessible content for all students is important. The more usable

and accessible the content is, the more students instructors can reach. At least, that is the theory I tested while conducting my research.

The following research includes a literature review and a survey in answer to which format course content should be presented as in Canvas. The literature review explains concepts surrounding the Theories of Universal Design, the theories themselves, and how the theories pertain to Canvas content. It also describes HTML content and PDF files and discusses the advantages and disadvantages of both formats. This survey is a pilot study, and it is an indication, not a definitive answer, as to whether or not converting PDF files into HTML content for courses in Canvas is overall beneficial for students attending Utah State University. This study also provides CIDI with the results necessary to determine if more studies should be conducted regarding this subject with a broader population that is representative of USU.

Literature Review

The Curb-Cut Effect

Usable content, or the usability of content, refers “to the ease of access and/or use of a product or website” (“What is Usability?”). The words “access” and/or “accessibility” refer to the “inclusiveness for people of all functional abilities, whether as an architectural attribute or functionality in information and computer technology (ICT)” (Pappas, 203). When designing a usable, accessible, and inclusive product, content designers may employ the curb-cut effect. The curb-cut effect is the argument that “[d]esigning [a product] to accommodate users with disabilities can benefit everyone” (“Design”). For example, curb-cuts are the small ramps placed between the street and the sidewalk. When the curb-cuts were first designed, they were meant to give veterans who are in wheelchairs easy access to the sidewalk from the street. Soon after, not only veterans and other people who use wheelchairs, but people who use bikes, strollers, who are

packing around rolling luggage, etc., were able to benefit from using the curb-cuts. So the intended purpose of the curb-cuts ended up benefiting everyone (“American with Disabilities Act,” 1990; Chemtov, 2019). The academic term for the curb-cut effect is called “universal design,” which I will discuss next.

Theories of Universal Design

Theories of Universal Design provide content designers with a way to consider the curb-cut effect in the technical communication field. For content designers, “The concept of Universal Design is about ensuring that technology is inclusive of all users” (Design, 2015). So when making something accessible, all consumers of a product, in the case of this study, students using Canvas content, need to be considered when that content is being designed.

Arguments for Universal Design.

When course content is being designed, the content should be flexible and accommodate those with disabilities. The Center for Applied Special Technology (CAST) states that “barriers to learning arise in learners’ interactions with inflexible educational goals, materials, methods, and assessments” (2015). So, when instructors employ the Theories of Universal Design in their classroom and in their coursework, they allow their students to interact with flexible materials, which is intended to be helpful to and for all students.

There is current research that backs up this claim by showing that having content designed for those with disabilities can be helpful to those who are not part of the disabled community. For example, in the study “Toward an accessible pedagogy: Dis/ability, multimodality, and universal design in the technical communication classroom” by Walters (2010), students were asked to examine how multimodalities and their learning styles influenced their learning of technical communication. Multimodalities are the increasing ways “in which

written-linguistic modes of meaning are part and parcel of visual, audio, and spatial patterns of meaning” (Cope & Kalantzis, 2000). This means that content is presented in more than one way; it could be presented as text, video, audio, etc. Learning styles are the ways in which people learn. People learn kinesthetically, visually, aurally, or a combination of the styles. As multimodalities present different ways for students to engage with learning material, and learning styles are specific to each student, multimodalities and learning styles are part of the Theories of Universal Design. The students in Walters’s study found that they “preferred multiple modes rather than [a] single” mode as a result of their differing learning styles and temporary impairments, such as a broken wrist (438). The students had a positive reception of the Theories of Universal Design regarding multimodality and learning styles. This is just one example of how the Theories of Universal Design have helped students learn from or interact with course content in the classroom.

Another example is Al-Azawei, Serenelli, & Lundqvist’s (2016) meta-analysis review of peer-reviewed journal papers from 2012 to 2015. This meta-analysis focused on the effects of Universal Design for Learning (UDL), which is one of the components of the Theories of Universal Design. Al-Azawei et. al., found that “[t]he majority of studies showed that a UDL-inspired course design positively affects user perceptions and/or academic performance” (7). A study by Hall, Cohen, Vue, & Ganley (2015) showed that “improvement in learner performance was attributed to UDL application,” a study by Coyne, Pisha, Dalton, Zeph, & Smith (2012) illustrated that the “successful implementation of UDL can promote the reading comprehension of learners with significant intellectual disabilities,” and another study by King-Sears et. al., (2015) explained that UDL had a “positive influence... on learner perceptions” (as cited in Al-

Azawei et. al., 2016, p. 7). Most of these studies are theoretically based and a few of them are empirically based.

Arguments Against Universal Design.

The empirically based data is still in its infancy, which is one of the arguments against using Theories of Universal Design in the classroom (Al-Azawei et. al., 2016). These arguments are concerned with the effectiveness of implementing the Theories of Universal Design in coursework. For example, in their article “Teachers Perceptions of Barriers to Universal Design for Learning,” Anstead J. and Elizabeth M. (2016) completed a study focusing on the perceptions of teachers implementing these theories in their curriculum. The participating teachers “perceived [the theories] as ‘difficult to implement, very time consuming, and requiring more work above and beyond their usual responsibilities’” (44). Another article titled "Promoting diversity in the universal : rethinking universal design for learning" by Jill Sadowski (2014), who is an advocator for implementing Universal Design in the classroom, notes that “there is very little active critique of UDL [Universal Design for Learning] within the field of study[,]” and accessing course content in the home environment has not been studied regarding these theories (22-23).

These issues have called into question whether or not Theories of Universal Design are, indeed, beneficial for the classroom and, more pointedly, everyone in the classroom. It is impossible to produce content that is absolutely usable and accessible to everyone; thus, no design can truly be universal. However, these theories are used to promote producing content with accessibility in mind. In other words, these theories are meant to encourage content producers to design content according to the accessibility guidelines from the beginning of the content’s production. This reduces the need to change predetermined mass curriculum into more

accessible content when a situation necessitates the more accessible version. This, in turn, gives students the content they require as soon as they need it without having to ask for the specialized content, and it provides less work for instructors later on.

As the words “accessible” and “accessibility” are repeatedly brought up in conjunction with the subject of Theories of Universal Design, it is important to distinguish which aspect of accessibility I am referring to in this research project. There are people who automatically think of disability and/or disabilities when they come into contact with the word “accessibility.” The word “disabled” does not have a “singular, commonly accepted definition,” because “the disabled community [is] so diverse and multifaceted” (Meloncon, 5). Although the technical communication field, or any field, really, can benefit from studying the multiple facets of the disabled community, this study focuses on disability as it relates to people who may have difficulty reading.

Difficulty in reading may be caused by many factors. This includes, but is not limited to, “[p]hysical problems related to vision or motor control; [c]ognitive problems, such as aphasia due to a stroke, congenital cognitive impairments, dyslexia, and memory loss from aging; [l]ow literacy due to poor schooling, lack of practice, limited access to reading materials, lack of exposure to a culture of literacy... and [r]eading in a nonnative language” (Jarret et. al., 39). Although it is difficult to make content accessible for everyone, especially regarding the many factors involved, it is still important to try to make content accessible for everyone. In order to ease reading difficulty or to make something accessible to a screen reader, it is important to consider the formatting of the displayed content. It is also important to know which format option is the best option when formatting course content in Canvas. This study focuses on two formatting options: HTML content files and PDF files.

HTML vs. PDF

The full name for HTML content files is “Hypertext Markup Language” files. These files are considered the default format of content spread on the web and are used to format text, tables, images, and other content that is displayed on a webpage. The full name for PDF files is "portable document format" files. They are used for the easy sharing of documents between computers and across operating system platforms. HTML files can be edited and are screen-reader friendly when they are designed correctly. PDF files are usually used as is and are friendlier for saving and printing. Both files can be and are used to display content in Canvas.

Hypothesis

Before conducting this research, Christopher Phillips from CIDI, my mentor Dr. Jared Colton, and I hypothesized that the HTML content would be more accessible and that students would prefer the HTML format. We hypothesized that the HTML would be more accessible, because it can be, and is recommended to be, designed using tags that can be read by a digital screen-reader. These tags specify the placement of the text, tables, images, and other content displayed on the webpage. The screen-readers are then able to skim and skip the content rather than interact with a linear stream of content that does not specify headings from paragraphs, and paragraphs from captions. This makes the HTML content accessible. According to the Theories of Universal Design, the HTML content should, therefore, be beneficial to all students. When I say “benefit,” I mean that all of the students interacting with the HTML would have an easier time distinguishing the content on the page or manually locating specific content compared to when they are interacting with the PDF. In turn, it was our understanding that the students would prefer the HTML content to the PDF files.

Methods

Participants

The participants of this study were recruited from USU's Professional Writing, ENGL 3400 class, sections one and two. Of the 37 student participants recruited, 36 (97%) completed the survey. The student participant population was comprised of 12 males and 26 females, all 18 years of age or older. As this study was anonymous, I do not know if any other characteristics of the students, including if they are or are not a part of the disabled community. Because the study conducted is a pilot study, the sample size is not representative of Utah State University as a whole.

Sherena Huntsman, the professor of the ENGL 3400 class, section one and two, discussed accessibility with her students, and the excerpts the student participants read as part of this study are part of their required reading for the course. Their accessibility topic was introduced before my study was conducted, and as my study was used as a segue into a more in-depth discussion, accessibility was discussed further after my study was conducted. Although the students were not required to participate in the study, they were given class time to complete the survey. The survey, including the time spent reading the two excerpts, lasted about 15 minutes in total. As this study is applicable to the class and their coursework, it was used to bolster the accessibility module taught in the class as opposed to having become extra work for the students.

Materials

The survey was distributed through Qualtrics, a web-based survey tool, via a link on a Canvas page. The student participants had access to this Canvas page and, thus, the link by accessing it through a link on the ENGL 3400 home page. The first section of the Canvas page explained that the study is for undergraduate research regarding the usability of course materials

in Canvas. The second section contained links to the students' required readings and an explanation that the readings were required for their course, and the third section contained the link to the survey.

Each student participant was given two excerpts from one short article, presented in two ways. The first version of the content excerpt presented the first half of the article as a PDF file and the second half of the article as an HTML file. The second version of the content excerpt presented the first half of the article as an HTML file and the second half of the article as a PDF file. The article was two pages at the maximum. Both the HTML files and PDF files were of high quality in order to avoid influencing the student participants' perception of the formats, which would, in turn, avoid influencing their answers to the survey questions. The second class's PDF file did, however, have a slight glare across the page.

The survey consisted of seven questions in total. The first question asked if the student participants read the letter of information and agreed to participate in the rest of the survey. The next five questions either asked about the student participants' preferences concerning the content excerpts or about the student participants' ease in reading the content excerpts. These questions are quantitative and provide statistical data for analysis. The last of the questions asked why the student participants preferred one format over the other. This question is qualitative and provides insight into what students think and feel about using each format in Canvas.

Procedure

Before participating in the study, the student participants were told that the study is for undergraduate research regarding the usability of course materials in Canvas and that their participation was anonymous and voluntary. They were also informed that they could choose to opt out of the survey at any point and for any reason. After being asked if they had any questions

regarding the survey or the research itself, which none of them did, they were directed to open laptops and log onto their Canvas accounts in order to read the excerpts for their course.

The student participants opened the article's excerpts on the laptops that were provided in their classroom (Room 101 of Ray B. West) or on their personal laptop. Half of the student participants, who were from ENGL 3400's first section, were shown content excerpt number one first, and the other half, who were from ENGL 3400 second section, were shown content excerpt number two first. After reading the articles, reading the letter of information, and agreeing to take part of the study, the student participants were given access to the survey. The letter of information was a part of the survey, as it was the first question. If the student participants answered "no" when asked if they read and agree to the letter of information, they were not able to continue answering the rest of the questions and the survey promptly ended. If they answered "yes," they were then directed to the rest of the questions. After the student participants completed the survey, they were thanked for their time and were left to continue the rest of their class.

Results

Overall, the results show that each format has its own advantages and disadvantages and that students have reasons for preferring either format. As this research is a pilot study and the population used for the study is not representative of USU as a whole, it indicates, but does not give a definitive answer, that students do prefer HTML files over PDF files. In this section, I discuss the quantitative and qualitative data of the survey's six major questions, which ask about the student participants' preferences about the content excerpts and/or the student participants' ease in reading the content excerpts.

Ease and/or Difficulty in Reading the Excerpts

PDF Excerpt.

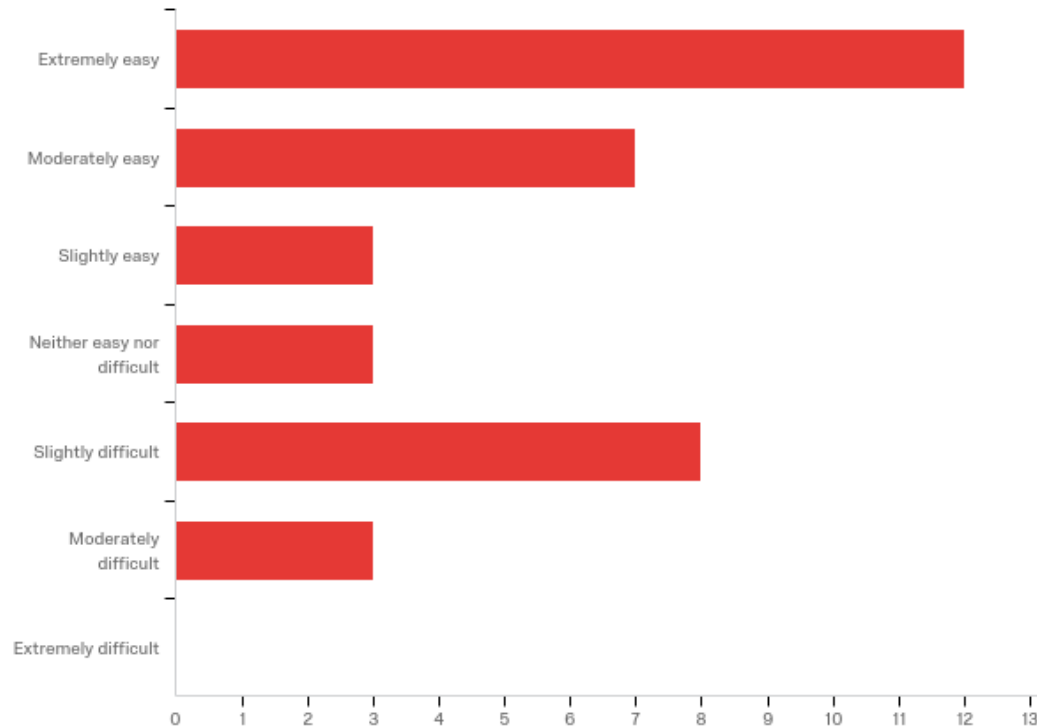


Figure 1. The student participants experienced varying degrees of ease and/or difficulty in reading the PDF excerpt. Most (33.33%) indicated that it was extremely easy for them to read.

When the student participants were asked how easy and/or difficult it was to read the PDF excerpt, they selected varying degrees of ease and/or difficulty. Figure 1 illustrates that 61.1% (22 of 36) of the student participants thought the PDF was slightly easy, moderately easy, or extremely easy to read. For 30.55% (11 of 36) of the students participants, reading the PDF file was slightly difficult and/or moderately difficult to read. The remaining 8.33% (3 of 36) of the student participants found reading the PDF files neither easy nor difficult, and none of the student participants thought the PDF files were extremely difficult to read. Most of the student participants indicated that they did not experience any difficulty in reading the PDF files. These

results imply that, even though some student participants experienced difficulty in reading the PDF files, the PDF files are still a viable tool for teaching the majority of a student population.

HTML Excerpt.

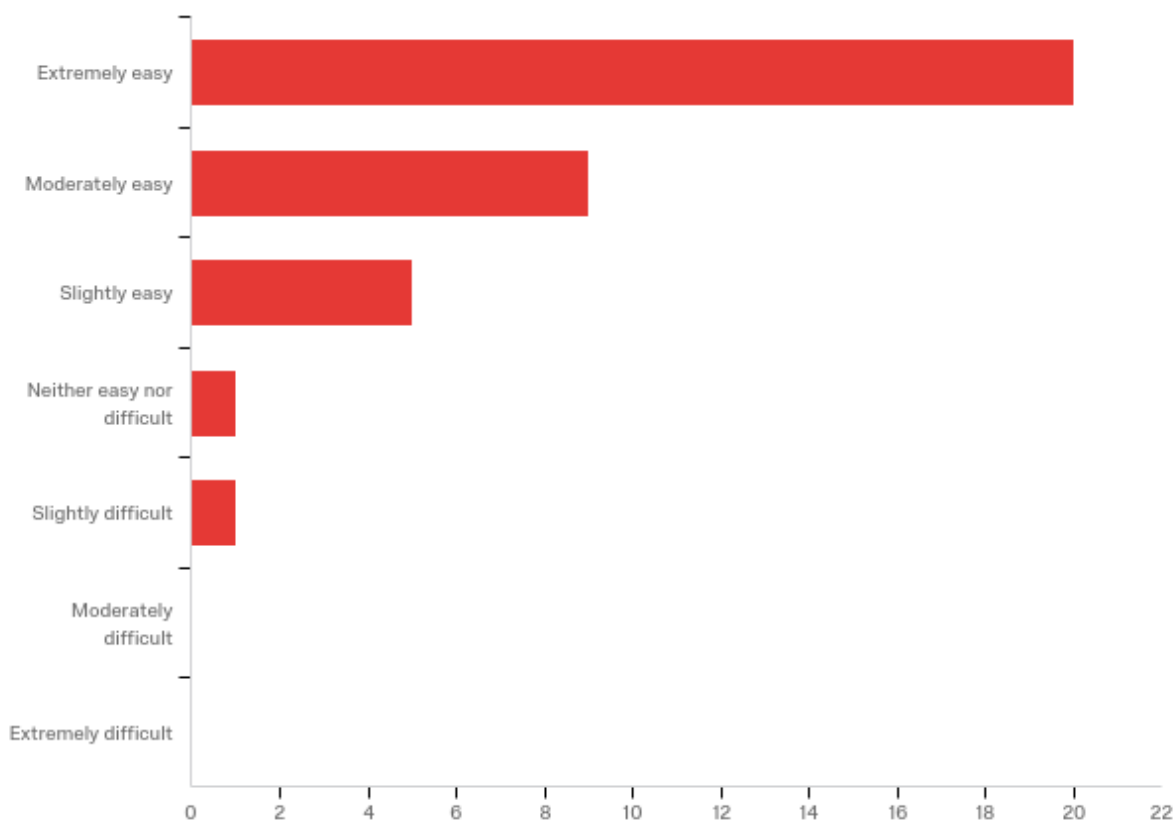


Figure 2. The majority, being 55.56% or 20 of 36, of the student participants found the HTML excerpt slightly easy or easier to read.

When the student participants were asked how easy and/or difficult it was to read the HTML excerpt, they favored the easy-to-read categories, as is illustrated by Figure 2 located above. This bar graph shows that 94.45% (34 of 36) of the student participants thought it was slightly easy, moderately easy, and/or extremely easy to read the HTML excerpt. One student, or 2.78%, thought it was slightly difficult to read, another 2.78% thought it was neither easy nor difficult to read, and none of the student participants found it moderately difficult or extremely difficult to read the HTML excerpt. This indicates that most of the student participants had an

easier time reading the HTML content than they did reading the PDF files. This means that, even though the majority of students were able to read the PDF files without difficulty, more of the student participants were able to engage with the HTML content than with the PDF files.

Excerpt Preference

Overall Preference.

When the student participants were asked which type of content they preferred overall, 69.44% (25 of 36) of the student participants selected the HTML excerpt, 25.00% (9 of 36) selected the PDF excerpt, and 5.56% (2 of 36) did not have a preference, as is illustrated in Figure 3 found below. So, the results show that, given the choice, the majority of the student participants preferred the HTML excerpt to the PDF excerpt. The reasons for this preference are given in the next section.

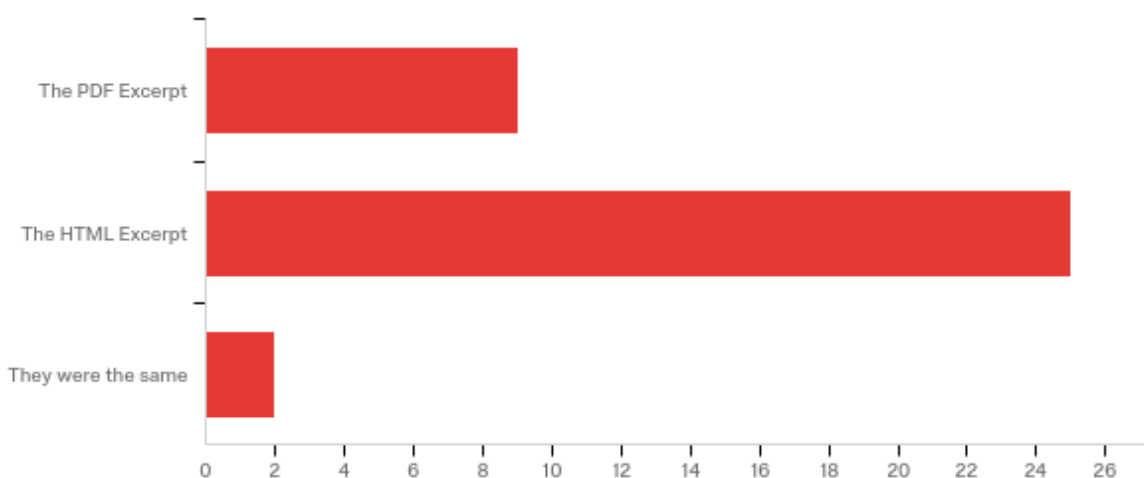


Figure 3. Of the 36 student participants, 25 preferred the HTML excerpt, nine preferred the PDF excerpt, and two did not have a preference.

Reasons for HTML Preference.

When the student participants were asked to describe why they preferred the HTML excerpt over the PDF excerpt, they gave a variety of reasons. I coded these answers for the most

common reasons the student participants gave for preferring the HTML excerpt over the PDF excerpt. The most common reasons they gave were because when they used the HTML format, they “didn't have to download anything,” the HTML excerpt is “easier to scan” (as in looking for specific content), and they felt that the HTML excerpt had a “cleaner look.” By not having to download the content, the student participants were able to engage with the text as soon as they were on the page, and they did not have to worry about having enough storage space available for the download. The answer “easier to scan” was referring to when the student participants were looking for specific content on the page. The student participants who thought the HTML excerpt had a “cleaner look” specified that their PDF had the slight glare across the page. So, when they say “cleaner look,” they are likely referring to the simple black and white design of the HTML compared to the PDF file that was picture of a textbook page, which was displayed to the second class.

Reasons for PDF Preference.

When the student participants were asked to describe why they preferred the PDF excerpt to the HTML excerpt, they also gave a variety of reasons. When coding for the most common reasons given, I found that the student participants usually preferred the PDF format, because it “had the original words from a published work, which lends credibility” to the PDF file, the student participants are “more familiar with PDF[s,]” and “the pdf opens in a separate tab.” When the student participants say that the PDF having the original words lends credibility to the PDF file, they are most likely referring to the PDF being taken directly from a primary source. This is especially obvious when the PDF file is in the form of a picture of a textbook. When the student participants say that they are more familiar with the PDF files, they are most likely referring to how often they come into contact with PDF files. As the student participants, and

most others who download, save, and share content, have had more contact with PDF files, they are more familiar with working with and navigating PDFs. This familiarity gives students a sense of comfort, because they do not have to worry about working with content they do not understand how to use. Finally, the student participants likely enjoy being able to open the PDF file in a separate table, because they then have the ability to compartmentalize the work on their screens.

Discussion and Implications

The aim of this study was to determine which format students prefer content to be formatted as in their Canvas courses: HTML files or PDF files. According to the Theories of Universal Design, my team and I hypothesized that the student participants surveyed would prefer the HTML content, because it is more accessible than the PDF files. In keeping with this theory, this should mean that the HTML is also more usable for students with and without disabilities. My research shows that students do prefer interacting with the HTML content over the PDF files. Because of this preference, the second goal of the research conducted was to determine if students at USU do actually benefit from the instructors applying the Theories of Universal Design to the formatting of content in Canvas courses by providing the more accessible version of the content. In this case, the instructors would provide the HTML files for their students before being asked to provide the HTML files.

Without conducting further research, I cannot definitively conclude that the curb-cut effect encompasses HTML files or that HTML files are overall beneficial for everyone. There has been research conducted on the Theories of Universal Design in the classroom in terms of providing alternative options such as text, video, and audio for content to be accessed, but there is very limited research comparing HTML files and PDF files in the context of the Theories of

Universal Design. Because of this, all I can conclude from my research is that the HTML files do appear to be more usable than the PDF files, and I hope my research prompts others to conduct more research on this topic. I especially hope my research is a motivating factor for USU's CIDI for when they conduct more research on this topic. It would be very advantageous for CIDI to conduct more studies involving a population representative of USU.

Some of these studies may include examining how HTML content impacts student engagement with material. This would study if the students interact with the content as opposed to only reading the content. The studies may also include examining if HTML content provides additional ways to measure the impact of content on the course experience, which would provide more feedback for instructors on how to best setup their courses. Another aspect further research could explore is whether or not HTML content increases the use of the Canvas mobile app. As the formatting between mobile and stationary devices changes the way content is displayed, those results could help determine which format is the best option for displaying content on a mobile device and/or a stationary device. In turn, depending on the results, more students may take advantage of the school's mobile apps available to them.

If more studies do provide a definitive answer concluding that HTML files are more usable for all students, then the university could start implementing more of these files into their Canvas courses in order to help maintain a high quality learning environment for the students. To help with this implementation, CIDI has a new tool that allows instructors to convert content into HTML content with a simple click of their mouse. After the conversion, instructors may need to cleanup the document depending on the quality of the original PDF file. This may result in a heavy workload for the instructors to implement, or it may be extremely easy for instructors to implement.

Ultimately, I hope that more research is conducted in order to determine if HTML files are, indeed, better for the students' learning environments than PDF files are and if HTML files are beneficial for all students. From there, we can research how HTML files are beneficial to students and when HTML files are beneficial to students. These answers will help CIDI and Utah State University's instructors create, albeit slowly due to the conversion process, and maintain a high quality learning environment for all students.

Capstone Reflection

Word Count: 1008

I had been sitting in class when I figured out the direction I wanted to take with my honors capstone, but, surprisingly, it was not a class focused on HTML content or PDF files. In Dr. Avery Edenfield's "Democracy in Digital Media" class, we were discussing the article "A Social Justice Theory of Active Equality for Technical Communication" that my faculty mentor Dr. Jared Colton co-wrote with Steve Holmes. Their article promotes technical communicators actively pursuing and enacting social justice in the content they create. This is in opposition to "passive equality," which is acknowledging injustice and waiting for another source to correct the injustice. "Active equality" allows technical communicators to enact social justice rather than waiting for another source to correct the injustice. Because of this article, I realized that I wanted to take an active role in creating accessible and usable content for all members of the audience my content is able to reach. I also wanted to take an active role in my technical communication major and conduct research that would help others, so I asked Dr. Edenfield how to get in touch with Dr. Colton. Even though Dr. Colton had never met me before and is quite busy with everything he does, he was willing to help me with my capstone.

At first, I had contemplated working directly with screen-readers, but as Dr. Jared Colton questioned me about the topic and I contemplated what exactly I would research, he directed me toward another one of my committee members, Christopher Phillips. Christopher works in the Center for Innovative Design and Instruction and has many important projects he is excited to dive into. One of his projects happened to be my research project, as he was kind enough to let me take it over.

I am very grateful for both of their guidance as I conducted my research. They taught me a lot about the entire research process, including how to write a proposal to the IRB, where to find sources for a literature review, how to set up a survey, and how to analyze and write about the research results. I also learned a lot about accessibility, including what exactly is considered a reading disability, how screen-readers function, and the different ways HTML content and PDF files can be displayed. Although we touch on all of these topics in the courses offered in my major, we do not have enough time to study them as in-depth as I needed to in order to conduct my research. Completing my capstone was very informative and eye-opening because of everything I was able to learn.

As I conducted my research, I became more aware of how much work it really was. I knew I needed to write a literature review and conduct a survey, but I did not realize all of the components that went into doing that. There are a lot of resources on accessibility, Theories of Universal Design, HTML content, PDF files, and the classroom experience, but there are not very many that encompass all of these topics. I could connect the dots between each of these topics, but I had to read a lot of articles and other informational content in order to make those connections. Many times, I forgot where I read what and had to find another source. I soon learned to bookmark what I was reading.

I had also never presented at a symposium before completing my capstone, because I had never wanted to stand up in front of others and talk. It was an extremely intimidating idea and still is, to be honest. I chose to present at two symposiums: the Student Research Symposium (SRS) and the English Undergraduate Research Symposium (EURS). By signing up for two, I was able to revise my presentation according to the feedback from the first presentation for the

second presentation, which I really liked. Creating the slides and my script for the symposiums was fun and helped me organize my content for when I wrote my research paper as well.

Some advice I would like to give to students who are planning on completing an honors capstone is keep track of any and all research you conduct, no matter how trivial it may seem at the time. Also, every time you have a chance to present your work to someone, do so. Practicing giving your presentation not only helps making it less nerve-wracking, it will help you feel more comfortable with your material and seem more knowledgeable. The way you present yourself is part of your work. Another piece of advice I have is to start writing your paper, whether it be the 5000- or 1000-word version, as soon as you possibly can. I wish I would have started mine sooner, which is why I am telling you this now. As someone who has to write all the time, I did not think it would be as difficult as it was. Do not underestimate what you need to do in order to produce the best end result you can.

Also, do not underestimate what you can do. I would never have thought that I could conduct research that was not part of a class or that I could write extensively on the research by myself. I absolutely did not think I would be able to present my research in front of a room full of people. I especially did not think I could or would do it twice. Completing this capstone was intimidating, scary, and long, but it was worth all of that. What I did is important and could lead to changes in how instruction is presented in Canvas, not only in my major but in the all of the disciplines USU offers. Knowing that my research could improve someone's experience, whether they are a part of the disabled community or not, with Canvas content means so much to me.

Overall, completing my honors capstone taught me a lot about my field, about how others interact with classroom materials, and about myself.

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Appendices

Appendix A: Letter of Information

Appendix B: HTML Content for First Class

Appendix C: PDF Content for First Class


Appendix D: HTML Content for Second Class

Appendix E: PDF Content for Second Class

Appendix A: Letter of Information



OFFICE of RESEARCH and GRADUATE STUDIES
Utah State University
INSTITUTIONAL REVIEW BOARD



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Protocol #9801
IRB Approval Date: February 21, 2019
Consent Document Expires: February 20, 2022

v.9

Letter of Information

Examining the Usability Impact of Accessible Canvas Content Compared to PDF Files

Introduction

You are invited to participate in a research study conducted by Danni Noyes, an undergraduate student in the English Department, her mentor, Jared Colton, Ph.D., and Christopher Phillips in the Center of Innovative Design and Instruction at Utah State University. The purpose of this research is to see if the theories of universal design that argue that material created for people with disabilities are overall better for everybody are, indeed, overall better for everybody. This theory will be tested in the context of PDF files vs HTML content. Your participation is entirely voluntary.

This form includes detailed information on the research to help you decide whether to participate. Please read it carefully and ask any questions you have before you agree to participate.

Procedures

Your participation will involve participating in a short survey based on 2 content excerpts from one short article, which should take about 15 minutes. The survey consists of 5 questions, 4 multiple choices and 1 short answer, asking about the difficulty of the content excerpts and your preferences regarding the format of the content excerpts. You will be given two excerpts (each is one half of a one-page article) of two articles, presented in two ways: 1) One content excerpt will present the first half of the article as a PDF file and the second half of the article as an HTML file and 2) One content excerpt will present the first half of the article as an HTML file and the second half of the article as a PDF file. You will be asked to open the articles on the English Department's laptops. After reading the articles, please fill out the survey. We anticipate that 37 people will participate in this research study.

Risks

This is a minimal risk research study. That means that the risks of participating are no more likely or serious than those you encounter in everyday activities. There is a very minimal risk of loss of confidentiality as the excerpts are accessed through Canvas. If you have a bad research-related experience or are injured in any way during your participation, please contact the principal investigator of this study right away at (435) 797-8412 or jared.colton@usu.edu.

Benefits

Participation in this study is unlikely to have any direct benefit to you, but may assist in the development of instructor resources to address accessibility of digital course information.

Confidentiality

The researchers will make every effort to ensure that the information you provide as part of this study remains confidential. Your identity will not be revealed in any publications, presentations, or reports resulting from this research study. We will collect your information through Qualtrics. This information will be securely stored in a restricted-access folder on Box.com, an encrypted, cloud-based storage system. The research team works to ensure confidentiality to the degree permitted by technology. It is possible, although unlikely, that unauthorized individuals could gain access to your responses because you are responding online. However, your participation in this online survey involves risks similar to a person's everyday use of the Internet.

It is unlikely, but possible, that others (Utah State University, or state or federal officials) may require us to share the information you give us from the study to ensure that the research was conducted safely and appropriately. We will only share your information if law or policy requires us to do so.

Department of English | (435)797-2733 | 3200 Old Main Hill | Logan, UT 84322



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Voluntary Participation & Withdrawal

Your participation in this research is completely voluntary. If you agree to participate now and change your mind later, you may withdraw at any time by exiting out of the survey before submitting it. Once the anonymous survey is completed, participation cannot be withdrawn as we will be unable to determine whose data is whose. If you decide not to participate, the services you receive from your instructor will not be affected in any way.

IRB Review

The Institutional Review Board (IRB) for the protection of human research participants at Utah State University has reviewed and approved this study. If you have questions about the research study itself, please contact the Principal Investigator, Jared Colton, at (435) 797-8412; jared.colton@usu.edu or the Student Investigator, Danni Noyes, at (435) 650-1116; noyesdanni@gmail.com. If you have questions about your rights or would simply like to speak with someone other than the research team about questions or concerns, please contact the IRB Director at (435) 797-0567 or irb@usu.edu.

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Danni Noyes
 Student Investigator
 (435) 650-1116; noyesdanni@gmail.com

Informed Consent

By continuing on to the survey, you agree to participate in this study. You indicate that you understand the risks and benefits of participation, and that you know what you will be asked to do. You also agree that you have asked any questions you might have, and are clear on how to stop your participation in the study if you choose to do so. Please be sure to retain a copy of this form for your records.

Appendix B: HTML Content for First Class

2/19/2019

Strategic Planning: Survey on Course Material Formats

Strategic Planning

Reference

Richard Johnson-Sheehan, Ph.D.
Associate Professor, Purdue University
Sponsored by Indiana DOT

Strategic Planning

Defining Subject, Purpose, Main Point, and Readers

Defining the subject, purpose, main point, and readers of your project may not seem like writing, but clarifying these items will help you write better and more efficiently.

Subject: The **Scope** of Your Project

The **subject** defines the scope of your project. Define the boundaries of your efforts—the kinds of issues your project addresses and the kinds of issues it does not.

Purpose

The **purpose** explains what project will do. Try writing your purpose in one sentence:

- "The purpose of this project is to..."
- "Our goal is to..."
- "The primary aim of this project is to..."

Main Point

Your **main point** states the overall aim of the project. For some projects, it helps to think of this as your "strong suit"—the aspect of your project that will be particularly appealing to your proposal's readers. It's what makes your work interesting, exciting, and important.

A main point can be articulated a variety of ways:

- "When this project is completed,..."
- "We believe this project will..."

Readers

A well-developed and articulated understanding of your readers will help you craft your documents more effectively and help you write more efficiently. When considering your readers, keep the following

Appendix C: PDF for First Class

Defining the Current Situation

Many proposal writers compose the introduction last, preferring to start with the body of the proposal's narrative.

The first section after the introduction is often a description of the current situation. In this section, you will define the problem your project is trying to solve, explaining the problem's causes and effects.

Guidelines for Understanding the Problem

While developing this section, you should keep three guidelines in mind:

- Guideline 1: Problems are the Effects of Causes
- Guideline 2: Ignored Problems Tend to Grow Worse
- Guideline 3: Blame Change, Not People

What Exactly is the Problem You Are Trying to Solve?

This might seem like an odd question to ask, but often people mistakenly try to address the symptoms of the problem and not the problem itself. Here are some questions to help you determine what exactly is the problem you are trying to solve:

- What changed to create this problem?
- Is this problem a symptom of a deeper problem?
- What aspects of the problem cannot be solved by you?
- Are you able to solve the whole problem or just a part of it?
- Can the problem be solved in stages?

What are the Problem's Causes and Effects?

A helpful technique is to use "idea mapping" to identify the causes and effects of the problem. The next two figures demonstrate how these idea maps work.

Identifying Causes: Put the problem you are trying to solve in the middle of a sheet of paper. Then, identify the 2-5 major causes of that problem. For each of these major causes, identify 2-5 minor causes that create the major cause. Keep mapping out until you have identified all the significant causes of the problem.

Identifying Effects: Again, put the problem you are trying to solve in the middle of a sheet of paper. Identify the 2-5 major effects of the problem if nothing is done about it. Then, identify 2-5 minor effects for each of those major effects.

These diagrams should give you a solid overall sense of the problem, its causes, and its effects.

Appendix D: HTML for Second Class

2/15/2019

Technical Communication Excerpt: Summary on Course Material Format

Technical Communication Excerpt

Reference

Lannon, J. M. & Gurak, L. J. (2017). Specific documents and applications. *Technical communication* (319-325). London, UK: Pearson.

John M. Lannon and Laura J. Gurak

Memo Parts and Format

A standard memo has the word "Memo" or "Memorandum" centered at the top of the page and includes a heading (flush to the left margin) identifying the recipient(s), sender (and senders initials), date, and subject. At the bottom of the memo, include a distribution notation if copies are to be sent to anyone not listed in the "To" line (usually managers who simply need to know that the memo was sent). Because memos are often read rapidly by busy recipients, they must follow this consistent, predictable format. Figures 14.1 and 14.2 show these standard elements.

The body copy (main text portion) of a memo should focus on one topic. Content should be complete yet compact, providing all the information readers need but not going into unnecessary detail. Organize the body of your memo by starting with a short introduction, and then a paragraph or two to address the main issue. Conclude by suggesting a course of action or asking your readers to follow up. Figure 14.3 shows a typical memo with all parts labeled.

Memo Tone

What memo recipients want to know

As a form of "in-house" correspondence, memos circulate among colleagues, subordinates, and superiors to address questions like these:

- What are we doing right, and how can we do it better?
- What are we doing wrong, and how can we improve?
- Who's doing what, and when, and where?

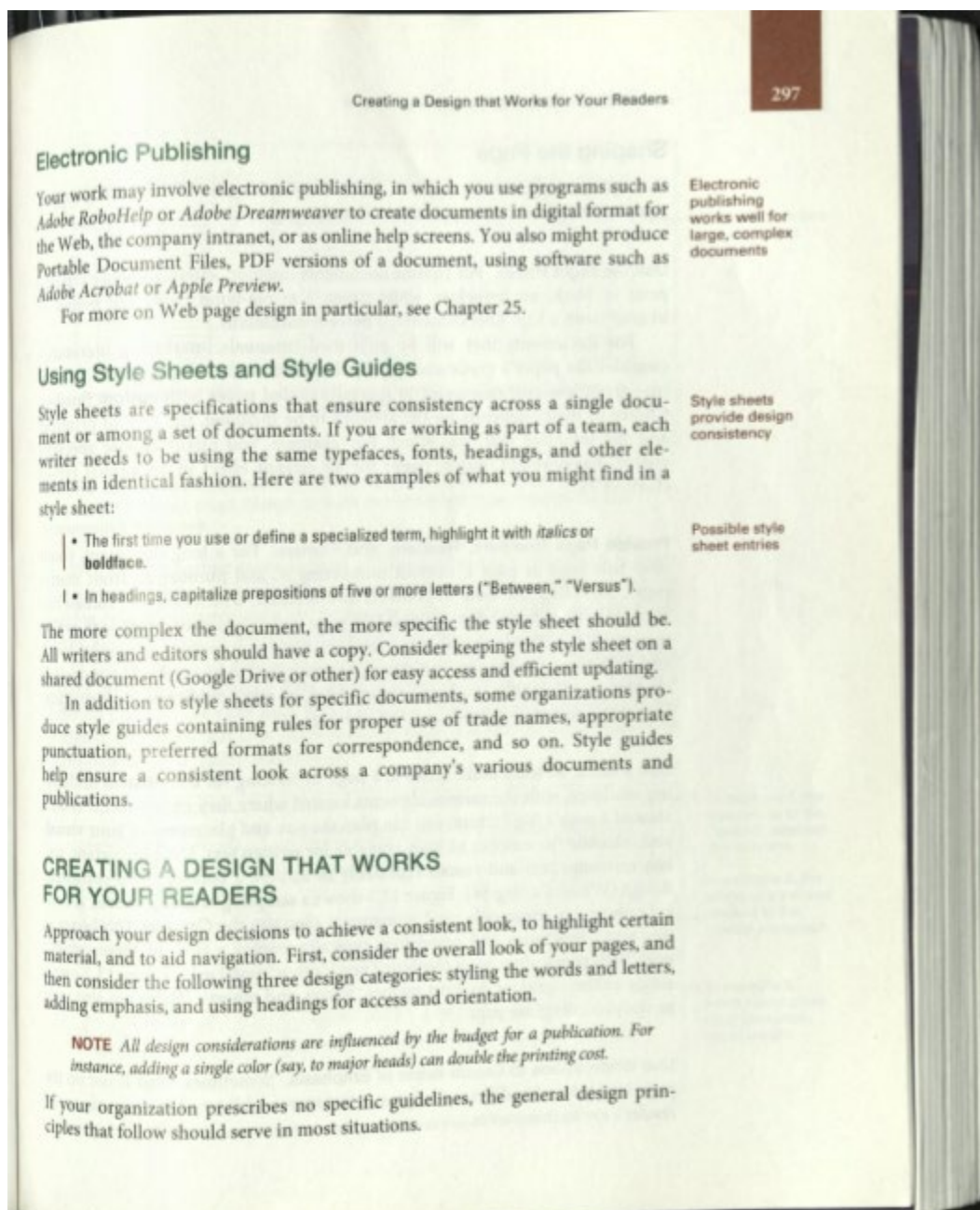
Memo topics often involve evaluations or recommendations about policies, procedures, and, ultimately, the *people with whom we work*.

Because people are sensitive to criticism (even when it is merely implied) and often resistant to change, an ill-conceived or aggressive tone can spell disaster for the memo's author. So, be especially careful about your tone. Consider, for instance, this evaluation of one company's training program for new employees:

<https://asu.instructure.com/course/2555571/page/technical-communication-excerpt>

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Appendix E: PDF for Second Class



Author Biography

Danni Noyes grew up in Price, Utah, alongside her three older brothers and twin sister. After graduating as Carbon High School's 2015 co-valedictorian, she continued pursuing her education at USU Eastern's Price campus. While there, she served as vice president and president of the Serving Utah Network, and she was a dance member of the Spirit Squad. After graduating with her associate degree as salutatorian in 2017, she matriculated to USU's Logan campus to pursue a degree in English with an emphasis in professional and technical writing.

While attending USU in Logan, Danni worked as a Writing Fellow and an Undergraduate Teaching Fellow. When she wasn't working at the school, she was carrying out secretarial duties in the technical communication club or participating in all that was offered by the Honors Program. Her classes, club, and participation in Honors led to her making many great colleagues and friends. In fact, she currently works at Bridgerland Technical College (BTECH) as an Instructional Design Intern with two of these friends.

After graduating with her bachelor's degree in English: Professional and Technical Writing, Danni plans on staying on at BTECH for a year. Then, she will apply to teach English as a member of the Peace Corp. No matter where life takes her, she hopes to positively impact those around her.