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Closing the Digital Divide: Understanding Organizational Approaches to Digital Accessibility in Higher Education

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CLOSING THE DIGITAL DIVIDE: UNDERSTANDING ORGANIZATIONAL APPROACHES TO DIGITAL ACCESSIBILITY IN HIGHER EDUCATION

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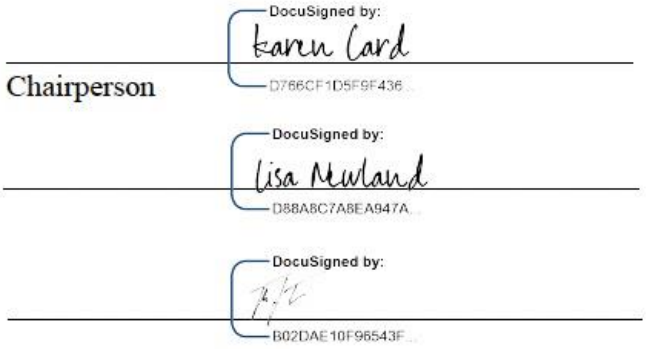

ABSTRACT

Digital accessibility practices are becoming standardized in higher education as institutions seek to meet compliance with federal and state equal access laws. Students with disabilities have equal rights to access university programs and services in digital format. The widespread use of assistive technology, artificial intelligence, and content available in digital format brings forth ethical and legal concerns about equal access for individuals with disabilities. While broad approaches to digital accessibility in higher education are in the literature, there is a growing need for more studies to examine comprehensive approaches to digital accessibility across multiple units, disciplines, and the organization's hierarchy. This case study examined individual participant interviews from 14 practitioners in different units and publicly available data to analyze how digital accessibility is addressed at three medium-sized public institutions of higher. During the inductive coding process, five main themes emerged related to implementing digital accessibility across the institutions, how it relates to people, practices, policies, and planning, and the larger body of literature on digital accessibility. The findings show there is no one-size-fits-all approach to digital accessibility. Institutions in higher education are motivated by risk management and compliance. A centralized and coordinated approach led to more organized efforts. Initiatives were largely led from the middle-level hierarchy. The availability of resources and funding affected the effectiveness of implementation efforts. The consistency of communication and uniformity of training affected the adoption of practices. Technology toolkits influenced the adoption of practices. Institutional policies and standards guided practices. Recommendations include prioritizing digital accessibility and student needs by designating a head of accessibility, coordinating efforts across units, centralizing processes, avoiding technology-only solutions, adopting the Higher Education Community Vendor Assessment Tool (HECVAT), and enacting an official policy that drives practices, expanding training for faculty, and providing consistent assistive technology support for students. An overall institutional coordinated plan for digital accessibility could lead to consistent and regular communication about policies and procedures and provide for a system of metrics and benchmarks.

Dissertation Advisor Dr. Karen Card

Dr. Karen Card

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I thank my family for their never-ending support and encouragement in helping me achieve my lifelong goal of obtaining a doctoral degree in education.

Dedication

This is dedicated to all my family members who live with a disability and struggle with equal access. First, my dear brother, Bobby, the earthly battle is over, and he is sitting victoriously with the King. My nephew-in-law, Ben, who never let low vision keep him from reaching his goals. My sister, Pam, never lost faith despite her physical challenges. And finally, I dedicate this work to all my family members struggling with a learning disorder – you are not alone.

Disclaimer

I am not a lawyer and do not intend for this manuscript to offer any legal advice, stated or implied**.**

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Glossary

Term	Definition
Accessible	The extent to which the human population can use services, facilities, environments, systems, and products with the broadest range of capabilities to achieve a specified goal in a specified context.
Accessibility (A11Y)	Equal access to a wide range of disabilities, including visual, auditory, physical, speech, cognitive, language, learning, and neurological disabilities
Accessibility Compliance Report (ACR)	Documentation of a product's conformance to Section 508
Assistive technology (AT)	Products, equipment, and systems that enhance learning, working, and daily living for persons with disabilities
Digital Accessibility	Refers to providing access for all people to web environments, especially those with disabilities
Digital Accessibility Plan (DAP)	A detailed set of approaches or steps for achieving digital accessibility goals at an institution.
EDUCAUSE	A nonprofit membership-based association whose mission is to advance higher education through information technology
Electronic information technology (EIT)	A collection of electronic and information technology resources used within an organization’s virtual setting or physical campus
Equal access	Providing easy access to digital content for an individual with a disability in an equivalent way as someone without a disability
Equally Effective Alternative Access Plan (EEAAP)	A plan that describes how to provide alternate access to the same information or services offered by a less-than-accessible technology
Higher Education Community Vendor Assessment Toolkit (HECVAT)	A questionnaire instrument created by the Higher Education Information Security Council (HEISC) specifically designed for higher education to measure vendor risk, including accessibility
Information and communications technology (ICT) Refresh	Updates and reorganizes the Section 508 standards and Section 255 guidelines to ensure that information and communication technology (ICT) covered by the respective statutes is accessible to and usable by individuals with disabilities.
J4P	Jackson 4P conceptual framework developed for implementing digital accessibility in higher education that relates four essential

Term	Definition
	domains for success – people, policies, practices, and people.
Learning management system (LMS)	A software application designed to host electronic content and delivery online instruction and related materials
Section 504	Part of the Rehabilitation Act of 1973 and a civil rights law prohibiting discrimination against qualified individuals with disabilities
Section 508	Part of the Rehabilitation Act of 1973 amended in 1998 to require Federal agencies to make electronic and information technology accessible to people with disabilities.
Universal Design for Learning	A framework to improve and optimize teaching and learning for all people based on scientific insights into how humans learn
Voluntary Product Accessibility Template (VPAT):	A document prepared by third-party software vendors that describe the extent to which a particular product is accessible
Web Content Accessibility Guidelines (WCAG)	Specifically defines how to make Web content more accessible to people with disabilities.

Chapter 1

Introduction

Digital accessibility in higher education is like a bridge connecting disabled people to online technology and digital information. Organizational approaches to digital accessibility can be more successful in post-secondary education at reaching accessibility goals when an institution adopts a proactive (Coleman & Berge, 2018; Leblois & Lee, 2022), centralized (Epshteyn, 2019), and coordinated (Bedford-Jack, 2023), planned strategy (Kline, 2020) instead of a siloed, reactionary response (Feingold, 2017). The current literature lacks research on well-established organizational approaches to digital accessibility for medium-sized institutions in post-secondary education. Researchers recommend more studies on understanding digital accessibility initiatives and approaches, supporting this study's need (Mancilla & Frey, 2020; Sinclair, 2019). As higher education institutions in the United States work toward digital accessibility goals, they encounter similar challenges (Sinclair, 2019). Understanding organizational approaches to digital accessibility in higher education facilitates effective digital accessibility programs and practices. Research about well-established approaches to digital accessibility in higher education has immense transferability to small and medium-sized institutions interested in campus-wide digital accessibility practices and strategies.

In this research study, digital accessibility is defined as the approaches and practices of reducing access barriers to digital content for people with disabilities and meeting the Web Content Accessibility Guidelines (WCAG).

The impetus behind creating inclusive online content that meets WCAG is that it works for all students using assistive technology to access university online services, information, and programs. In the most basic sense, digital accessibility fosters equal access to content and reduces barriers for students who use assistive technology to access online course materials.

Beyond the legal reasons for digital accessibility, implementing digital accessibility practices across the university is *the right thing to do*. From a social justice and equity perspective, it is a student-centered approach that proactively addresses accessibility as an inclusive practice (Kezar & Posselt, 2020).

The rise in students with disabilities in higher education has been an impetus for increased research and studies on how approaches to digital accessibility affect faculty and administration. According to the most current data from the National Center for Education Statistics (2019), 19% of undergraduate students in the 2015-16 year reported having a disability (Guilbaud et al., 2021). Thelin (2017) points out that colleges have historically been resistant to accommodating students with disabilities and have looked for exemptions or ways to circumvent the law, primarily due to the administrative cost and burden. In addition to being the *right thing to do*, U.S. federal law under Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (1990) require equal access to digital content for students and adult learners with disabilities (Burgstahler & Doe, 2006; Feingold, 2017; Guilbaud et al., 2021; King & Piotrowski, 2021). However, colleges and universities may not have a scalable organizational-wide approach to addressing digital accessibility across the institution. In addition, approaches and implementation strategies in higher education for digital accessibility are often limited in scope and operate in a siloed fashion that limits scalability. As a result, implementation can be sporadic, with inconsistent practices across schools and colleges within the institution (White, 2019).

Digital accessibility organizational planning is commonly characterized by implementing several important elements for widespread adoption, implementation, and long-term sustainability (Clark, 2021; GAO, 2009; Hope, 2020). Four primary domains of a comprehensive

organizational approach to digital accessibility include having people, policies, practices, and planning (Jackson, 2022). However, challenges exist in understanding how to meet an organizational approach while accommodating varying institutional factors such as teaching disciplines, size, budget model, culture, and administrative structure (Carter, 2018; McAlvage & Rice, 2018).

The compelling problem is that digital accessibility institutional-wide approaches for small to medium-sized universities in higher education are not widely researched. It is a significant problem to study because of the steady number of civil lawsuits and investigations by the federal Office of Civil Rights in higher education for lack of federal compliance with U.S. disability laws in digital spaces (Sieben-Schneider & Hamilton-Brodie, 2016). The issue is compounded by the rapid growth in online programming, especially during the COVID-19 pandemic when schools went 100% online (Pregowska et al., 2021; Thomas & Stritto, 2021). From a legal perspective, there remains a *digital divide* that excludes individuals with disabilities from accessing some or all aspects of Web content and online course content (King & Piotrowski, 2021).

Some small to mid-sized universities and colleges are not seeing digital accessibility planning as an institutional priority until a federal investigation or legal complaint is filed against the institution (Scheinder & Hamilton-Brodie, 2016). A reactive approach versus a proactive approach has a more resource-intensive outcome (Scheinder & Hamilton-Brodie, 2016). Tobin and Behling (2018) posit, “Instead of adopting the mindset that we must reactively address every access need, we can design our interactions so that the greatest number of people can take part in them without having to ask for specific accommodations” (p. 134).

Colleges and universities are prohibited from adopting practices that deny disabled individuals equal access to educational services and programs offered to others (King & Piotrowski, 2021). Studying organizational approaches to digital accessibility on a college or university campus helps administrators and leaders understand how to: reduce legal liabilities, develop accessibility maturity goals, adhere to federal requirements, and reduce access barriers to content for individuals with disabilities and adult learners using assistive technology.

An online student who meets qualified entrance requirements to a college or university should not be denied equal access to higher education goals because of a diagnosed disability. However, Roberts et al. (2011) reported that 45.8% of students who had taken online courses perceived their disabilities as a barrier to their success in online courses, and 69.7% of students had not disclosed their disabilities to online instructors. Therefore, this study sought to understand the relationships among implementation approaches and strategies within higher education digital accessibility planning and how they affect student success and equal access.

Digital accessibility organizational approaches should consistently include building awareness and opportunities for learner engagement with the students most affected by the practices (Tobin & Behling, 2018). For example, during one of my graduate school experiences, I was surprised to learn how little the faculty and staff knew about students using adaptive technology (AT) to access digital content. Adaptive technology for digital content access is any software or hardware individuals use to interact with electronic information technology (EIT) or digital data. Examples include computer screen reading software, zooming software, speech-to-text software, automatic speech recognition, braille keyboard, and software devices that offer closed captioning capability.

Faculty have an important role as digital content creators and are responsible for providing equity through effective and meaningful inclusive design practices (Lederman, 2017; McAlvage & Rice, 2018; Taylor & Burnett, 2021). Faculty struggle with applying digital accessibility practices in online courses (Murray et al., 2014; Phillips et al., 2012; Sanderson et al., 2022). According to Guilbaud et al. (2021), faculty members at most institutions are not always prepared to provide the necessary accommodations to assist online students with accessible materials in their courses. The lack of faculty and staff feeling prepared and knowledgeable on digital accessibility practices may point to coordinated approaches to training (Sanderson et al., 2022). University and industry-sponsored research have shown increased engagement when equity for students with disabilities is integrated into the content used in online courses (Chazen, 2021). Coleman & Berge (2018) assert that "Universities are responsible for offering accessible websites compatible with assistive technologies to be open to students of diverse backgrounds beyond race, gender, orientation, religion, and class" (p. 2).

This study also looked at the influence of a social justice and equity approach using the Kezar and Posselt (2020) model that for students with disabilities to flourish and meet their academic goals, practitioners must have a cooperative *mode of thinking* that can call attention to inequity patterns. A clearly defined approach must include an applied practice or model that is mindful of the current evidence and conscious of ways historically excluding students with disabilities in online programs (Burgstahler, 2023; Collier, 2020). A well-executed equity plan can generate new practices (Kezar & Posselt, 2020) that advance digital accessibility administration campus-wide (Marquis et al., 2016; Morina & Carballo, 2017).

Another institutional-wide approach examined in this study is the *Jackson 4P Framework* (J4P) which establishes elemental points of success across four primary domains – people, policy, practices, and planning (Jackson, 2022).

Administrators may struggle to explore all the issues surrounding digital accessibility planning and may not carefully reflect on the problems they find due to a lack of knowledge on how to approach digital accessibility campus-wide. This study sought to understand how administrators implement planning, policy, practices, and human resources related to digital accessibility efforts and the steps taken to maintain consistent implementation.

The mindset challenge for administrators and faculty in higher education is that they address accessibility at the endpoint of the design step, i.e., *after the fact* rather than at the beginning. Building accessibility into content creation is simply *+1 thinking* (Tobin & Behling, 2018). The literature supports that trying to retrofit accessibility practices in the post-production step results in extra work, costs, and time delays for the student getting access. Coleman & Berge (2018) point out that creating an accessible online course requires more time, effort, and resources, which can prevent instructors from incorporating accessible elements into their courses.

This study seeks to understand the application of *mindful administrative practices* (Kezar & Posselt, 2020) to the mindset challenge when implementing digital accessibility practices in higher education. Kezar and Posselt (2020) posit that mindful administrators are more likely to explore the ethics of a situation and seek out information. Mindfulness is a way to approach digital accessibility practices in a specific way with wisdom (Kezar & Posselt, 2020). Mindfulness of digital accessibility's impact on the broader campus body is a wise administrative practice that should avoid potential pitfalls and mistakes. Thelin (2017) posits that the emphasis

should be on the interaction of significant stakeholders. Reflective practice frees an administrator from being locked into any existing structure and imagines new possibilities for rolling out a digital accessibility initiative that focuses on social inclusion and equity rather than policy-driven rules. Ethical and reflective consideration is paramount to address concerns around the cost and burden of meeting digital accessibility campus-wide. Wise planning includes a stakeholder body from key departments on campus as a platform for hearing and addressing concerns from those affected by a digital accessibility campus-wide initiative.

As a graduate student living with a major neurocognitive disorder, I have experienced the benefits of inclusive design firsthand. I have also experienced accessibility demands from the perspective of a community college instructor for eight years. Currently, I am a digital accessibility coordinator at a medium-sized liberal arts public university located in the upper Great Plains. In addition, I was part of the planning team related to a settlement agreement with the Department of Education Office of Civil Rights on an investigation related to compliance under Section 504 of the Rehabilitation Act of 1973 concerning accessibility of websites and online programs, which supports the need for this study. My personal experiences helped inspire this study and provided a rich context for the research topic.

Conceptual Frameworks

The three conceptual frameworks used in this study are *Web Content Accessibility Guidelines (WCAG), Universal Design for Learning (UDL), and* the *Jackson 4P Framework (J4P).* All three frameworks are essential to understanding a well-established approach to digital accessibility in higher education.

Web Content Accessibility Guidelines

The Web Content Accessibility Guidelines (WCAG) by the Worldwide Web Accessibility Initiative (W3C/WAI) (2018) is the most recognized conceptual framework used in meeting digital accessibility compliance. WCAG considerations have consistently appeared in literature, lawsuit settlements, and complaint agreements (Carlson, 2022; White, 2019). In addition, WCAG 2.1 (World Wide Web Consortium, 2018) is included in the technical requirements established by regulations issued under Section 508 of the Rehabilitation Act in the United States (36 CFR Part 1194), also known as the *ICT Refresh Law*. WCAG 2.1 is organized under four broad principles of accessibility, which purport that web content must be perceivable, operable, understandable, and robust. Under each of these principles are more specific success criteria for its application in making web content accessible. The success criteria are divided into three priority levels: Level A, AA, and AAA. Each successive level achieves superior accessibility than that which precedes it. When setting digital accessibility goals, institutions often target Level AA dependent on the application and end-user needs (White, 2019).

Universal Design for Learning

Universal Design for Learning (UDL) began in 1984 when Dr. David Rose and Dr. Ann Meyer, two researchers from the Harvard School of Graduate Education, incorporated CAST, Inc. (Meyer et al., 2014). It is a framework for the inclusive design of instructional materials and assessment methods that are usable by many students, especially those with a disability. UDL is based on neuroscience research by CAST and disciplines that recognize that students have individual learning preferences and patterns. Learning systems should accommodate students' learning variability by providing materials in multiple modalities (Burgstahler, 2015; Tobin & Behling, 2018). UDL resists a one-size-fits-all approach to education and suggests that teachers,

educators, and instructional materials should proactively respond to individual differences inherent within a learning environment (Kennette & Wilson, 2019). UDL seeks to improve and optimize teaching and learning for all people based on scientific insights into how humans learn (Fornauf & Erickson, 2020). It provides a framework for applying multiple means of Engagement (the WHY of learning), multiple means of Representation (WHAT of learning), and multiple means of Action and Expression (the HOW of learning) in the design of a course (Meyer et al., 2014). Taking this a step further, Universal Design (UD), combined with Web Content Accessibility Guidelines (WCAG), is a two-pronged holistic approach that aims to reduce barriers and improve experiences for learners with and without disabilities. In an educational setting combining the conceptual framework of UD with WCAG provides even more excellent opportunities for a conceptual approach to teaching, learning, and assessment that responds to the learning needs of individual students, including those with disabilities (Burgstahler, 2015, p. 246; Burke et al., 2016; Tobin & Behling, 2018).

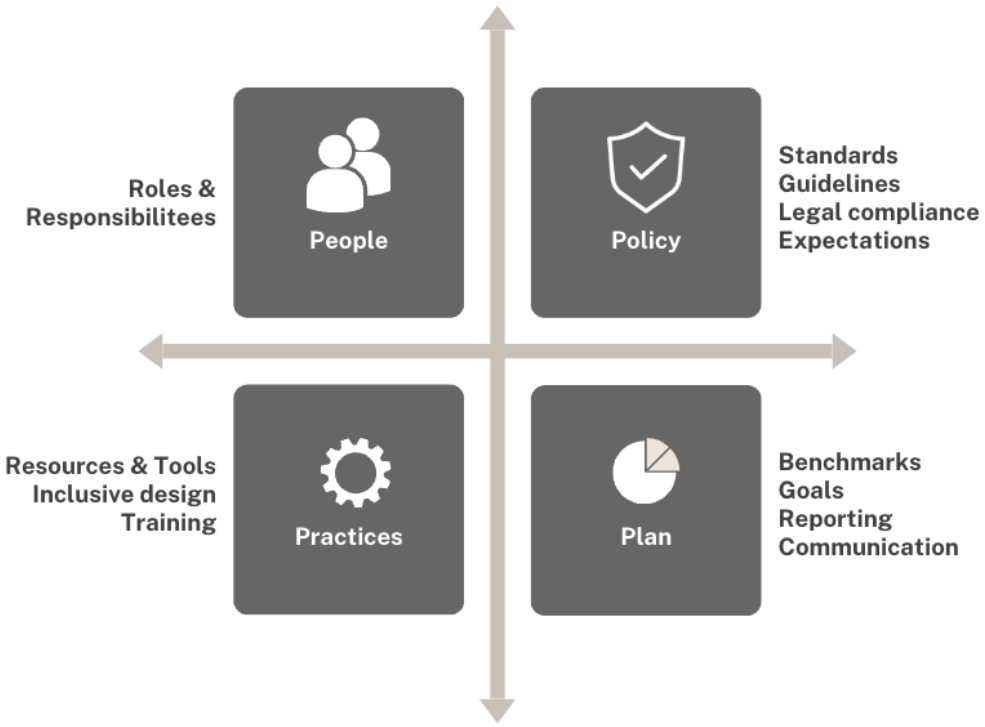
Jackson 4P Framework

The *Jackson 4P Framework (J4P)* is an example of an organizational approach to implementing centralized and coordinated digital accessibility in higher education across all units. Bohman (2007) posits that "holistic system-level solutions are necessary" and "only a systematic, coordinated effort can result in a comprehensive, sustained implementation of the best techniques and technologies" (para. 2). I developed the J4P as a coordinated, holistic approach in 2019 and taught it through the EDUCAUSE Learning Initiative. It consists of four domains - 1) people (who), 2) policies (why), 3) practices (what), and 4) planning (how) which include multiple elements customizable to each institution within each domain. The *J4P* is a structured organizational approach for implementing digital accessibility in higher education that

was developed to foster a collaborative, centralized, coordinated, measurable, sustainable, and adaptable solution for institutions, colleges, or schools. It is a practical method using applied techniques that can lead to a greater level of adoption and helps ensure digital accessibility goals are implemented and maintained by the institution. Figure 1 shows a visual relationship of the four primary domains of the J4P framework.

Figure 1

Relationship Among the Four J4P Domains and Essential Criteria



Theoretical Model

One theoretical model applied in the study is Kezar and Posselt's (2020) equity and social justice model. Kezar and Posselt (2020) emphasize that “at its core, wisdom is about balancing many interests that exist, even when we are not aware of how many interests are at stake; part of wisdom is pushing oneself to see broader interests that should be weighed” (p. 9). Therefore, it is prudent for administrators to be wise when it comes to digital accessibility and understand

planning for equity and inclusion of persons with disabilities. Two frames of the Kezar and Posselt model that was particularly important in this study are administrative mindfulness practices and student-centeredness.

Purpose of the Study

This comparative case study examined data from three public, medium-sized universities located in the northern tier of the United States with distance education programming and a digital accessibility policy. The qualitative case study aimed to help illuminate institutional approaches to implementing digital accessibility in higher education. Also, of interest is to investigate the effectiveness of a centralized, coordinated approach in the planning and implementation of digital accessibility in higher education organizational-wide.

Research Questions

The central research question in the qualitative study is: What are the organizational approaches to digital accessibility in higher education?

Sub-questions regarding organizational approaches to digital accessibility in higher education included the following:

1. How do current digital accessibility implementation practices support reaching goals and plan maturity across the organization?

2. How does the maturity of an organization's digital accessibility plan relate to the adoption of practices across departments?

3. How does having a coordinated approach relate to the organization’s digital accessibility efforts?

Significance of the Study

Lawsuits and OCR investigations related to digital accessibility issues continue (Launey, 2020; Rowland, 2023), and solutions to reduce risk favor an organizational approach to digital accessibility with a designated web accessibility coordinator (Feingold, 2017; DOJ vs. The Regents of California, 2022) rather than an *ad hoc, siloed* approach.

Organizational approaches to digital accessibility for medium-sized universities are not well-established in the literature. Existing approaches favor large universities. Other approaches are applied within a single organizational unit or focus on one specific process or procedure.

Medium-sized IHEs often do not have sufficient resources and administrative structures to manage an effective strategy for digital accessibility across the institution.

The rise in students with disabilities in higher education regardless of size has been an impetus for prioritizing digital accessibility to help lower access barriers to university programs. The number of students enrolling in public universities taking online courses continues to increase, especially since the COVID-19 pandemic (Bergtahler, 2023; McKenzie, 2023; Wiley et al., 2023). NCES (2022) reports that "a majority of students with disabilities at both 2- and 4-year institutions do not inform their school" (para. 1).

However, the primary reason universities roll out digital accessibility practices continues to be legal protection (Sinclair, 2019). Federal legal mandates are required for equal access to university programs and services in digital format and online, regardless of the institution's size (Carter, 2018; deMaine, 2014; Feingold, 2017).

Applying a coordinated and consistent approach to digital accessibility in higher education reduces access barriers for those with disabilities and makes programs more accessible (Burke et al., 2016; deMaine, 2014). Phillips et al. (2012) concluded that an additional study is

necessary to determine if universities, in general, are providing adequate support for students and faculty around online accommodations and attitudes and behaviors toward digital accessibility. Phillips et al. (2012) believe colleges and universities would benefit from an intentional tiered model. Coleman and Berge (2018) concluded that a more proactive approach is warranted in higher education. Burke et al. (2016) posit that within the learning environment, there should be a "reasonable, coordinated, and consistent effort by institutions of higher education" to make programming accessible (p. 178). Sobeck (2003) acknowledges the difficulty of forming and maintaining coordinated activity and that a well-established framework should be applied for individuals to work together on a policy problem.

The study could yield important insights regarding staff and faculty perception and attitudes toward digital accessibility and its workload challenges. In addition, the study's results could identify the proactive and best practices to help faculty better understand how to make course materials accessible to improve knowledge levels.

This study could offer additional data for understanding best practices for digital accessibility as an avenue to help student learning and student degree completion for adult learners with disabilities enrolled in higher educational institutions.

Organization of the Study

This study is organized into five chapters. Chapter 1 has presented the introduction to organizational approaches to digital accessibility in higher education, statement of purpose, research questions, the significance of the study, definitions of terms, and limitations. Chapter 2 reviews related literature and research that apply to digital accessibility planning and approaches in higher education. Chapter 3 presents the methodology and procedures that guide the research study. Chapter 4 includes the results of the inductive analysis and findings from each case study.

Finally, chapter 5 presents the deductive analysis, cross-case findings, conclusions, and recommendations for practice and further study.

Limitations

There were some methodological limitations of the study. Consequently, the study's results may have limited transferability to different contexts and educational settings.

The researcher was the key facilitator in this study. In addition, the organizational participants had a professional relationship with the facilitator of this study.

The researcher was employed full-time as the digital accessibility coordinator for one of the participants in the study and had expert knowledge of the subject being studied.

The study was restricted to organizational participants that were EDUCAUSE members and had already implemented a digital accessibility policy.

The study was confined to three medium-sized colleges and universities located in the northern tier of the United States actively engaged in digital accessibility and still working toward maturing their current plan.

Chapter 2

Review of Related Literature and Research

This chapter includes literature reviews and research on existing practices and problems within higher education related to understanding organizational approaches to digital accessibility. This research includes my experience with the *Jackson 4P Framework*, day-to-day realities of common practice, literature reviews, research, essays, and subject matter expert reports.

This chapter comprises six main sections beginning with a brief background of digital accessibility in higher education in the United States and logistics relative to the study. The second section discusses the conceptual and theoretical frameworks applied to this study. The following section titles discuss the four primary domains of a postsecondary digital accessibility approach – *policies, people, practices,* and *plans.* Each section includes subsections that further discuss the essential elements for consideration by looking at the problems and practices and discussing considerations. Chapter 2 concludes with a summary.

Digital Accessibility Background

The topic of digital accessibility for students with disabilities has been around for decades but gained importance as the Internet grew, online courses expanded, and distance education is now mainstream, fueled by the COVID-19 pandemic (Burgstahler, 2006; Behling, 2017; Lee, 2017; Linder et al., 2015; Pregowska et al., 2021; Robinson & Wizer, 2016; Roehrs, Wang, & Kendrick, 2013; Rao & Tanners, 2011). Adding to the rise in distance education courses is the parallel rise in the number of students with disabilities enrolled in higher education (NCES, 2019; PNPI, 2021; Raue & Lewis, 2011). Therefore, an increased need to have access to digital content in a format that fits the variability of the student's needs (NCES, 2019; Raue &

Lewis, 2011). In addition, lawsuits, directed investigations, and legal complaints filed against educational institutions increased because students and adult learners with disabilities were not awarded the same equal access to online courses mainly (Burke et al., 2016; Feingold, 2017; McAlvage & Rice, 2018). The issue was that web content did not function with the common assistive technology used to access the content (Adam et al., 2018; King & Piotrowski, 2021; Youngblood et al., 2018).

The recent rise in legal complaints about inaccessible digital content in online digital spaces garnered academic leaders' national attention, and discussions around policies and guidelines emerged (Carlson, 2022; Carter, 2018; Linder et al., 2015; Feingold, 2017; Behling). However, it was not until universities started receiving legal complaints, fines from the Department of Justice, and notices from the Office of Civil Rights (OCR) that institutions began paying attention to the laws that apply to digital accessibility in higher education (Sieben-Schneider & Hamilton-Brodie, 2020). The notifications of OCR investigations and legal complaints cited violations of the Americans with Disabilities Act and Section 504, part of the Rehabilitation Act of 1973, (OCR, 2010) which are designed to provide access for qualified students to online educational programs without discrimination (Burke et al., 2016; Carter, 2018; Gronseth, 2018; King & Piotrowski, 2021). Now that the debate has been settled regarding digital accessibility laws applying to online course content, a shift has emerged, focusing on developing a campus *culture* of accessibility that provides momentum for digital accessibility rather than the initiative driven solely by legal requirements. In addition, colleges and universities are promoting partnerships and collaborations among the centers for teaching and learning, offices of disability services, and offices of diversity, equality, and inclusion (Behling, 2017; Thompson, 2018).

A significant recurring theme revealed in the literature is that faculty are undertrained and ill-prepared on the requirements of digital accessibility and how to design a course with accessibility in mind (Archambault et al., 2016; Bong & Chen, 2021; Moriña & Carballo, 2017; Mamboleo et al., 2020; Murray et al., 2014; Phillips et al., 2012; Scott, 2019; Sutton; 2017; Wynants & Dennis, 2017). As the ADA laws started to regulate online education opportunities being the same as face-to-face, it launched a need for faculty education and training on how to design a course for a person with a disability (Burgstahler, 2002; Burke et al., 2016; King & Piotrowski, 2021). The 2010 Managing Online Education Survey by WICHE Cooperative for Educational Telecommunications reveals that 34 percent of the campuses report that ADA compliance for online courses and programs resides with the individual faculty who teach an online course (Green, 2010). Because faculty are largely responsible fixing their own content, the Department of Education OCR office started sharing that the best way to educate faculty and support staff on the federal laws was to promote online course accessibility during faculty development opportunities (Mobley, 2018, 2021). A redesigned faculty training program from the University of Toledo showed that "engaging and educating faculty members is the most direct path to creating fully accessible online courses" (Hope, 2020, p. 1). A study by Lazar (2020) conducted with three universities before and during the COVID-19 pandemic revealed that captioning was challenging and there is a need for increased faculty and staff training. The Lazar study showed teams were limited, but "they could magnify impact by training others within their organizations to understand accessibility and do testing and remediation" (p. 763).

Disability Statistics. Disability statistics support the need for accessibility in higher education (Houtenville and Boege, 2019). Scott (2019) reports that after decades of growth, the reported presence of students with disclosed disabilities on college campuses appears to be

approximately 11% of the college population nationwide, according to federal data from the 2015 National Center for Education Statistics. Incidence figures vary depending on the methods of data collection. There is a report that 17.7% of undergraduates identified themselves as having a disability at large public research university (Zehner, 2018). The number of students with disabilities is increasing in proportion to the growth of online learning post-COVID-19 pandemic (Chen, 2021). Literature supports the need for digital accessibility approaches to cover all modalities of learning and all digital spaces on campus and move past just relying on the accommodations model (Chen, 2021; Getzel, 2008).

Under the accommodation model, the student must provide the supporting documentation institutions require to arrange reasonable accommodations and communicate the student's specific needs to instructors (Gin et al., 2020). Universities typically handle accommodations on a case-by-case basis, providing individualized support to students when they self-disclose their disability. Many students do not report their disability to their Office of Disability Services or their instructor (Coleman & Berge, 2018; De Cesarei, 2015; Getzel, 2008; NCES, 2022). One study showed that approximately 75% of students with disabilities choose not to self-disclose their disability and consequently receive no support services (Wynants & Dennis, 2017). Wiley et al., (2023) posits that digital accessibility is more than accommodations; It's inclusion" (p.126). Nevertheless, research on accessibility reports that proactively providing accessible materials to all students, even those without a disability, benefits everyone, especially those who choose not to self-disclose (Coleman & Berge, 2018).

Conceptual and Theoretical Frameworks

The three concepts central to this study were approaches, practices, and buy-in. Below I discuss the conceptual and theoretical frameworks utilized for each of these concepts.

Web Content Accessibility Guidelines

Digital accessibility approaches in higher education must include standards or guidelines. The most accepted standards are the Web Content Accessibility Guidelines (WCAG) 2.1 by W3C (2018). WCAG is a well-established practice and widely accepted set of technical principles broken down into specific success criteria that guide web content creators in meeting specific levels of accessibility adherence in their design and development – level A, level AA, or level AAA. The essential principles of WCAG practices include making digital content that is perceivable, operable, understandable, and robust (POUR) to the end user (Adams et al., 2018; Chee & Weaver, 2021; White, 2019). One of the goals of applying WCAG to web content is to make the page usable by individuals with disabilities using adaptive technologies or assistive devices such as screen readers and closed captioning (Fernandez, 2018). However, the added benefit of designing to meet WCAG principles is that it makes content much more adaptable and usable by people without disabilities and those using mobile and *smart* devices.

Institutions involved in settlement agreements from lawsuits or complaints often adopt WCAG principles to meet digital accessibility compliance. It is the industry standard response to resolving inaccessible content. For example, in the consent decree described in the DOJ vs. The Regents of California (2022), U.C. Berkeley agreed to make all content accessible to the many people with disabilities who want to participate in and access the same online educational opportunities provided to people without disabilities. The procedures section of the consent decree specifically requires making content accessible to WCAG. For institutions rolling out digital accessibility campus-wide, applying WCAG principles are fundamental.

Applying WCAG principles to digital content is an effective and rigorous practice to reduce digital content barriers and improve experiences for adult learners with disabilities using assistive technology.

Literature and research revealed that institutions are better able to meet digital accessibility needs when there is a unified campus-wide adopted standard that supports embracing equal access, opportunity, and inclusion in online courses and public websites (Adams et al., 2018; Carter, 2018; GAO, 2009; Sieben-Schneider & Brodie Hamilton, 2016; Sinclair, 2019). In addition, the literature reveals that many of the OCR and DOJ settlement agreements related to higher education accessibility lawsuits and complaints were agreed upon once the organization provided evidence of standardized accepted practices (Carlson, 2022; Schmidt et al., 2016; DOJ vs. The Regents of California, 2022; Wynants & Dennis, 2017).

Universal Design for Learning

Universal Design for Learning (UDL), developed by CAST[1] is a widely applied conceptual framework in higher education with an inclusive course design approach. The UDL framework, paired with the Web Content Accessibility Guidelines (WCAG) framework, are integral components of the *Jackson 4P Framework* (Jackson, 2022). UDL is a *practice* of applying a set of design principles to a class or online course that incorporates variabilities and choice so that all students learn better (Burgstahler, 2015; Meyer et al., 2014). It provides adult learners and students with a more inclusive learning experience. UDL is a conceptual framework that attempts to design accessible learning environments and curricula to accommodate all learners without specialized adaptation or accommodation (Burgstahler, 2015; Kennette &

[1] CAST is a nonprofit research and development organization located in Massachusetts that works to expand learning opportunities for all individuals, especially those with disabilities, through Universal Design for Learning (UDL) (CAST, n.d.).

Wilson, 2019; Meyer et al., 2014; Robinson & Wizer, 2016). The rest of this section will briefly describe the principles of UDL and why they are considered essential practices within an organizational approach to digital accessibility in higher education.

The Higher Educational Opportunity Act of 2008 defines Universal Design for Learning (UDL) as a scientifically helpful conceptual framework for guiding educational practice without compromising rigor: (a) provides flexibility in the ways information is presented, in the ways students respond or demonstrate knowledge and skills, in the ways students are engaged; (b) reduces barriers in instruction; (c) provides appropriate accommodations, supports, and challenges; and (d) maintains high achievement expectations for all students, including students with disabilities and students who are limited English proficient (U.S. Department of Education, 2008)

An important emerging theme in research is that online courses that include UDL in their design and undergo a quality assurance process for electronically delivered courses are better able to meet the overall needs of students with disabilities (Gronseth, 2018; Robinson & Wizer, 2016; Sutton, 2017). As part of the response to digital accessibility, some colleges and universities adopted a mixed model consisting of three frameworks—Universal Design for Learning, Web Content Accessibility Guidelines, and Quality Matters (Gronseth, 2018; Murray et al., 2014; Robinson & Wizer, 2016).

This study looked at integrating the UDL framework as a practice to support online course digital accessibility compliance in the post-secondary setting. UDL makes reaching accessibility compliance one step easier because designing with UDL principles lays the foundation for meeting digital accessibility compliance (Burgstahler, 2006, 2015; Gronseth, 2018; Linder et al., 2015). Many design principles in UDL overlap with web content

accessibility practices (Gronseth, 2018; Tobin & Behling, 2018). Integrating UDL into an organizational approach to digital accessibility for universities and colleges can bring higher student satisfaction and retention rates in online courses (Fornauf & Erickson, 2020; Getzel, 2008; Tobin, 2014, 2016). Designing with UDL can also increase student engagement in online teaching modalities – synchronous hybrid or blended courses and asynchronous online courses (Fornauf & Erickson, 2020; Gronseth, 2018; Kennette & Wilson, 2019; Langley-Turnbaugh et al., 2013). Universities and colleges that adopt a digital accessibility initiative may find that integrating UDL principles in online courses leads to faster maturing institutional accessibility goals.

UDL consists of three essential concepts of practice: multiple means of representation, multiple means of action and expression, and various engagement standards (Meyer et al., 2014). When used to guide curriculum development in online courses in higher education, these principles provide access to distance learning to the widest possible audience by reducing potential barriers to digital content and offering adult learners a flexible path to understanding content (Fornauf et al., 2020; Kennette & Wilson, 2019; Laist et al., 2022; Meyer et al., 2014; Novak & Thibodeau, 2016).

UDL impact on online learning. When used to guide curriculum development in online courses in higher education, UDL principles provide access to distance learning to the widest possible audience by reducing potential barriers to digital content and offering adult learners a flexible path to understanding content (Fornauf et al., 2020; Kennette & Wilson, 2019; Laist et al., 2022; Meyer et al., 2014; Novak & Thibodeau, 2016). UDL is about making online educational environments and interactions within those online environments accessible to everyone. UDL alone does not create accessible content, but it complements the Web Content

Accessibility Guidelines (WCAG) in many ways. UDL gives the student greater autonomy in their choice of which approach to learning works best for them. Thomas J. Tobin coined the phrase *Plus-One Thinking* to describe how to approach UDL for content designers (Tobin & Behling, 2018). Students benefit when the content in an online course is made available in multiple formats for ease of access, understanding, and comprehension. For example, in addition to the auditory format, students benefit from available recorded lectures, with the choice of turning on closed captioning or reading a written transcript (Tobin & Behling, 2018). Closed captioning is also especially helpful for students with English as a second language (Youngblood et al., 2018).

Creating online courses with UDL principles proactively benefits all students with and without disabilities (Novak & Thibodeau, 2016). The principles of UDL aid in making course content accessible for students without the student having to request formal accommodation for the class. Online courses designed with UDL can reduce stress for students with disabilities who may fear being stigmatized by faculty for disclosing their disability and reduce the pressure on the instructor to address the challenge (McManus et al., 2017). This is known as the "negative emotional valence" of people's experience with accommodation requests (Tobin & Behling, 2018, p. 5). In the research study conducted by Burgstahler (2006), she concludes that “faculty and student responses suggest that instructors often see accommodations for students with learning disabilities as an arbitrary and unfair advantage" (p. 20). The study found that students with invisible disabilities, i.e., learning disabilities, psychiatric disabilities, and health problems, pose the most challenges to instructors. (Burgstahler, 2006; Mamboleo et al., 2020). Robinson and Wizer (2016) recommend from their research that new faculty developing online courses for the first time should seek recommendations for the process and look for suggestions from higher

education faculty experienced in implementing UDL. Applying the UDL conceptual framework in online courses offered in a higher education setting looks promising in reaching as many students as possible while reducing barriers to learning and helping reach institutional goals for digital accessibility. Colleges that have adopted approaches to digital accessibility often include UDL as a core framework (Bastedo et al., 2013; Tobin & Behling, 2018; Carter, 2018; Sieben-Schcneider & Hamilton-Brodie, 2020; Wyants, 2017).

Kezar and Posselt Equity and Justice Framework

Beyond the federal guidelines, the equity and justice framework by Kezar and Posselt supports adopting digital accessibility as an inclusive approach to digital content for adult learners in higher education. It is beneficial in understanding experiences related to disability as a social justice cause and engaging in group conversations and interactions across campus about the good that digital accessibility brings to adult learners with disabilities (Scott, 2019). It can serve to validate the everyday experiences of digital accessibility challenges and support strategies. The literature shows that meeting digital accessibility compliance mandates, laws, and goals can feel overwhelming for faculty and staff doing the day-to-day practices (Brown et al., 2022). Administrators could help faculty better understand by explaining *the why and how* of digital accessibility. Understanding equal access and participation in higher education includes awareness of equity and social justice issues (Scott, 2019). Administrators must be mindful of the approach used to meet digital accessibility goals on campus so that one opinion or voice does not dominate the path to equity, inclusion, and ethical concerns surrounding accessibility goals in digital spaces (Jackson, 2020).

Jackson (2020) describes how Kezar and Posselt (2020) have developed a framework for administrators to empower those who wish to use their jobs to create equity and justice as part of

addressing digital accessibility buy-in. The Kezar and Posselt (2020) equity and justice framework in higher education administration is composed of seven key components: 1) Clear definitions of equity and justice, 2) Mindful administrative practice, 3) Wisdom in judgment, 4) Critical consciousness about power, 5) Knowledge of self and positionality, 6) Student centeredness, and 7) Routinizing mindfulness and wisdom (p. 5). Kezar and Posselt (2020) advocate for addressing equity and justice issues, such as equal access to digital content through a cooperative spirit of using shared understandings, explicit meanings, and guiding principles for effective action. Jackson (2020), citing Martha Nussbaum, said, "There can be no justice without opportunity for full inclusion, whether we are discussing cooperation among nation-states or institutions and people within a country" (p. 6).

A broad campus voice through a digital accessibility committee is part of the single shared focus (Jackson, 2020). A stakeholder body with decision-making authority and balanced interests representing most departments, students, and leaders on campus is the primary platform for hearing and addressing the concerns of those affected by the digital accessibility campus-wide initiative (Jackson, 2020). Shared governance around digital accessibility is a way to address blind spots that administrators or groups can develop that hold power and influence (Kezar Posselt, 2020). Students are part of the decision-making within a campus-side approach. A clearly defined digital accessibility initiative is an "equity-minded" model that is mindful of the current evidence and conscious of patterns that have historically excluded students with disabilities in online programs and include a systematic strategy that engages the inequality.

The Jackson 4P Framework

Jackson (2022) developed a framework for implementing a campus-wide digital accessibility approach using a coordinated strategy. The four frames include - 1) people (who),

2) policies (why), 3) practices (what), and 4) planning (how). It is a structured organizational approach for implementing digital accessibility in higher education. Having a campus-wide approach or strategy is supported in the literature (Bedford-Jack, 2023; Medrano & Fundell, 2023; Wiley et al., 2023). As with any good plan, an organizational-wide approach aims to guide the institution toward meeting digital accessibility goals and a greater level of maturity (Leblois & Lee, 2022; Sinclair, 2019).

People. Research reveals that "more mature accessibility programs appear to reduce their reliance on external accessibility expertise by developing in-house experts" (Sinclair, 2019, p. 12). Some organizations have one or more internal accessibility champions (Behling & Tobin, 2018, p. 207), and most work is performed at the department level with a coordinated effort (Brown et al., 2022). Sinclair's (2019) study showed that for an organization to achieve and sustain accessible results, the leadership team must support and promote its accessibility program (p. 8). Institutions with someone in charge of accessibility can have a more effective approach by reaching more people (Kline, 2020). Feingold (2017) recommends putting someone in charge of digital accessibility "so the buck has somewhere to stop" (p. 9). The DOJ consent decree with the University of California at Berkeley (2022) included designating a "web accessibility coordinator to oversee, manage, and coordinate" the university's web accessibility procedures, tracking, reporting, and documenting the requirements set out in the consent decree (p. 8). Tobin & Behling (2018) posit that "strategic partnerships [across units] are a success in many ways" for approaching digital accessibility and UDL (p. 251).

Some research has shown evidence of existing confusion about who is responsible for online accessibility, with most responsibility falling to the Office of Disability Services by default (Behling & Linder, 2017). Feingold (2017) quotes Kline (2020) who posits that head of

digital accessibility needs to be in “a neutral placement” (p. 57) within the organization, so the position can reach all departments “without being subject to the business agenda of any particular unit or subunit” (p. 194). Although the Office of Disability Services might have assistive technology specialists, they often lack the broad technical expertise in WCAG to respond effectively to digital accessibility compliance across web platforms and learning management systems (Behling & Linder, 2017). A Center for Teaching and Learning has skilled staff most able to train and support faculty with UDL and provide a basic understanding of WCAG, but lack the technical skills and responsibility to oversee the university’s website spaces. Studies showed that increasing faculty members' competence and confidence in providing accessible and inclusive digital materials in learning environments produced better practices (McAlvage & Rice, 2018). Faculty accessibility specialists help faculty members to gain knowledge while guiding them with one-on-one support (Bong & Chen, 2021).

A popular business management model is the hub and spoke model, and one study shows it was adopted by 29% of organizations (Sinclair, 2019). Having trained people can lead to greater competence of digital accessibility practices among faculty and staff (Bong & Chen, 2021; Huss & Eastep, 2016). A coordinated team of qualified support specialists within the institution provides a valuable resource for staff and consistency across departments (Epshteyn, 2019). Faculty support specialists include people skilled in UDL located in centers for teaching and learning that can assist with inclusive course design and content remediation (Tobin & Behling, 2018). The downside to dedicated staff is cost. In most institutions, digital accessibility efforts are led from within the information technology department because of its technical nature. Behling and Linder (2017) recommend that as higher education steps up to make institutional-level changes toward embracing accessibility, centers for teaching and learning “should be

prepared to function in partnership, leadership, and collaboration" with other departments, especially the Office of Disability Services (p. 9). Tobin & Behling (2018) describe a Center for Teaching and Learning as leading accessibility initiatives from the middle of the organization that leads to the creation of a roadmap or plan for the institution (p.244).

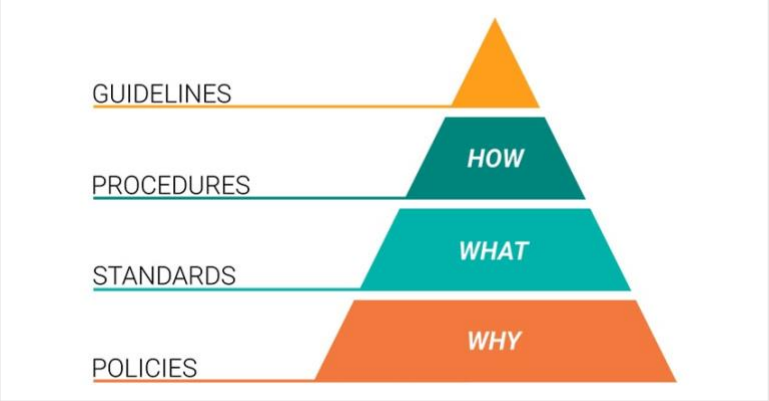
Policy. The aim of institutional policies in higher education is to minimize the risks of wrongdoing, mitigate liability, and avoid non-compliance issues with federal and state mandates (Carter, 2018). Beyond state and federal regulations, an institutional policy is the local engine that gives power to the person in the driver's seat trying to get to their destination. Digital accessibility policies can be far-reaching and cover procurement, websites, student information systems, learning management systems, student portals, and other tools and services across an institution.

Literature shows that accessibility compliance at the organizational level defines the why behind the need (Epshteyn, 2019; Lazar, 2015). Significant gaps can exist in digital accessibility planning when there is no apparent reason behind why the efforts are needed. A policy also gives administrators the authority to make decisions and take actions to meet digital accessibility compliance and allocate resources to ensure its effectiveness (Lazar, 2015).

While policy development is an important step toward digital accessibility in higher education, the literature shows a gap regarding how policy impacts digital accessibility buy-in and compliance levels by faculty, staff, and administrators (Epshteyn, 2019). Therefore, having a digital accessibility policy is only one part of an overall approach. A policy is best when it is followed by the individuals affected. A policy that is enacted but has no authority or is not enforced is at risk of being ignored. Figure 2 depicts how a policy influences the overall process of a digital accessibility plan.

Figure 2

How Policy Affects Processes



Practices. There is value in using a shared set of resources and tools across the organization that facilitates effective accessibility best practices (Sinclair, 2019). Using well-established tools ensures that practices are more equally and effectively applied across departments and digital spaces. In addition, the literature points out that a lack of awareness and knowledge impedes faculty from following accessibility practices (Guilbaud et al., 2021). Therefore, it is best practice to communicate digital accessibility benchmarks and goals clearly to all staff and faculty with a unified message from leadership (Epshteyn, 2019).

Numerous approaches are described in the literature for implementing digital accessibility practices. A study by Sinclair (2019) shows that “among fully integrated, mature programs: 64% use tools with built-in accessibility checking; 57% adopted design and authoring best practices; 54% have a central accessibility team; 54% incorporated accessibility criteria in contracts and purchase orders, and 46% adopted accessibility engineering practices" (p. 10).

An important overarching best practice for meeting digital accessibility is monitoring and measuring compliance through manual or automated methods. Other best practices include implementing a quality assurance process for conducting regular reviews of online courses

(Roehrs et al., 2013) and evaluating web interfaces for accessibility using assistive technology through human usability testing. Shachmut & Deschenes (2019) describe one university's approach to addressing the need for increased accessibility through testing carried out by cross-departmental teams using a process for recruiting people who use assistive technology to serve as potential testers for university interfaces. *Quality Matters Rubric Standard VIII* offers a rubric and criteria for helping faculty understand how to meet digital accessibility requirements in online courses and provide a design concept that works with modern assistive technologies (Kearns & Mancilla, 2017; Murray et al., 2014; Robinson & Wizer, 2016).

Other best practices include conducting software compliance reviews as part of the technology purchase process, requiring the use of only approved accessible software programs in online courses, and regularly auditing digital spaces for digital accessibility compliance (Adams et al., 2018; Leblois & Lee, 2022). Having a qualified technical expert review accessibility conformance reports (ACR) from software vendors before purchasing is another best practice (Coghill, 2018, p. 135). Not all organizations document the effectiveness of their practices and how they are being measured (Sinclair, 2019). Developing metrics, benchmarks, and keeping track of their progress is an important practice in an organizational-wide approach to digital accessibility compliance (Leblois & Lee, 2021; Whiting & Rowland, 2013).

Research shows the importance of regular and flexible training for staff and faculty to increase knowledge of digital accessibility best practices (Bong & Chen, 2021: Guilbaud, 2021). An effective training program can motivate faculty and staff to willingly engage in recommended best practices (Guilbaud, 2021). Nover (2021) recommends that administrators "should consider what kind of incentives faculty might need to participate in digital accessibility certification or workshops" (p. 5). Literature supports best practices in course design, and

universities should find ways to provide instructors with the necessary resources and tools to make it happen (Sanderson et al., 2022). Sinclair's (2019) study revealed that among educational institutions, 53% invest in materials for an inclusive classroom.

Adopting a *technology toolkit* can aid in standardizing practices. A shared *technical toolkit* includes university-approved software tools, templates, and training resources to maintain consistent practices (Clark, 2021). For example, software tools can help with automated scoring, adding automatic closed captioning, and guided remediation. In addition, computerized tools speed up the practice of identifying and fixing non-compliant content. Using automated software-based checking tools as a *first step* is common in remediation efforts, but it does not guarantee compliance or effectiveness.

Software reviews are an important practice in digital accessibility efforts toward compliance. A thorough approach to software evaluation before procurement prevents unknowingly deploying software with access barriers. Bohman (2007) posits that a "holistic approach would include provisions for procurement policies and procedures that support accessibility proactively rather than reactively" (para. 18). The Higher Education Community Vendor Assessment Toolkit (HECVAT) (EDUCAUSE, 2021) is an instrument used to evaluate software and protect the institution and its systems from inaccessible software from third-party vendors

Sinclair's (2019) study revealed that most respondents are interested in additional guidance and resources related to strategies for consistently authoring accessible content and media and designing and engineering practices to create inclusive products (p. 1).

Planning. Institutions of higher education should create a plan or road map that allows administrators to monitor, measure, and achieve compliance with accessibility over time. Sieben-

Schneider & Hamilton-Brodie (2016) recommend that "if institutions are strategically planning for ICT accessibility up front, they will most likely spend less money remediating and building their infrastructure" (p. 225). Whiting & Rowland (2013) recommend applying a benchmark and planning tool to conduct a meaningful reflection on an institution's web accessibility culture (p. 6). They developed a blueprint that guides institutions through several key steps of implementing accessibility that include, (a) gaining the support of the administration, (b) planning, (c) benchmarking, (d) reporting, (e) providing recommendations, and (f) creating an action plan (p. 1).

W3C Web Accessibility Initiative (WAI) (n.d.) recommends implementing an organizational-wide plan for web accessibility. "After an organization makes a commitment to accessibility, it is important to plan the process for implementing accessibility" (para.1). W3C WAI (n.d.) has established suggested planning steps to roll out the implementation of digital accessibility across an organization that include the following:

- establish responsibilities
- conduct an initial assessment
- develop an organizational policy
- select software for evaluating Web accessibility
- provide training
- make the website accessible
- promote awareness
- monitor the Web site for accessibility

Sinclair's (2019) study shows that no *one-size-fits-all* program plan for digital accessibility will produce optimal results (p. 7) and "no single process or approach will work for

every organization" (p. 1). Institutions of higher education experience challenges toward meeting the goals of accessibility regardless of their size or region. Sinclair believes that organizations "tend to be more successful if they have an executive sponsor who consistently champions accessibility and ensures the necessary investments in people, processes, technology, and tools" (p. 7). Sinclair's (2019) study shows a positive correlation between the increased maturity of an accessibility program and the organization's level of investment in specific leadership and management components.

Jackson (2022) recommends an organizational approach that mirrors the *Jackson 4P Framework* with dedicated people, defined policies, effective practices, and a measurable plan with benchmarks and long-term goals. Jackson's framework is different from other approaches in that it is created for the complex hierarchy and the regulatory nature of public institutions of higher education. Sieben-Schneider & Hamilton-Brodie (2016) argue that if institutions are "strategically planning for digital accessibility up front, they will most likely spend less money remediating" and building their resources (p. 225). In Sinclair's (2019) study, 57% of respondents described their [accessibility] programs as either "ad hoc or beginning to define a repeatable approach," and they do not have standardized accessibility processes or procedures (p.7). Digital accessibility approaches must be flexible and adaptable to institutional and technological changes (Lazar et al., 2015).

Multiple methodologies assess an organization's level of accessibility maturity (Sinclair, 2019, p. 7). Planning should include benchmarks that lead to maturity. For the purposes of this study, Sinclair's (2019) definition of organizational maturity for digital accessibility was used (p. 7). Sinclair (2019) defines a genericized maturity model for digital accessibility that uses the following scale:

- chaotic or ad hoc
- beginning to define a repeatable approach
- standardized processes and procedures adopted across the organization
- proactive planning and management of investments with accountability for results
- integrated into all aspects of the organization's work to achieve optimal results

Sinclair (2019) asserts that the most mature programs have higher levels of investment in a written policy, allocated funding, accessibility resources, an executive sponsor, and a senior role leading their organizational-wide program (p. 8).

The literature discusses several approaches that universities have taken in response to creating a digital accessibility strategy (Adams et al., 2018; Carter, 2018; Chee & Weaver, 2021; Hope, 2020; Linder et al., 2015; Sieben-Schneider & Hamilton-Brodie, 2016; Sinclair, 2019; Tobin & Behling, 2018; White, 2019; Wiley et al., 2023). A few similarities stood out after reviewing the factors for success across institutional approaches. Most had an initiative led by an executive sponsor passionate about digital accessibility that led awareness campaigns. Despite universities having active practices in place, Behling and Linder's (2017) data suggested a lack of awareness of the importance of online accessibility as an institutional imperative for organizations. Other factors were having a digital accessibility policy and uniform practices across the organization. Other commonalities included trained technical teams on digital accessibility and adopting a web accessibility standard, e.g., WCAG 2.1 level AA. Institutions had in common a group of support staff, either paid or volunteers to assist staff and faculty with remediating non-accessible materials. Far fewer institutions had a dedicated, centralized budget. Few had a written long-term strategic plan for addressing digital accessibility across campus. It

is getting more common for institutions with a centralized approach to have a designated digital accessibility coordinator or someone acting as *head* of accessibility efforts.

Summary

Understanding approaches to digital accessibility in higher education has far-reaching effects on students and encompasses many different strategies and practices. The literature showed that there isn't a *one size fits all* approach to meeting digital accessibility compliance, and there exist serious gaps in training and knowledge for faculty and staff to understand digital accessibility requirements. Qualified people providing support and carrying out practices are an important resource. A centralized approach is often characterized by a designated coordinator. A good policy guides practices. Planning provides a roadmap to reaching goals. "Digital accessibility affects everyone" and "needs to be easy to achieve" (Wiley et al., 2023, p. 126 & 127).

Chapter 3

Methodology

This chapter presents a brief discussion of the study's purpose, the research questions guiding the study, the methods used to conduct the literature review, how the case sites were chosen, the background I brought to the study, and a description of the comparative case study methodology used to arrive at conclusions.

Purpose of the Study

The qualitative case study aimed to understand organizational approaches to digital accessibility at a medium-sized institution in higher education. Also, of interest is to illuminate a centralized, coordinated approach in the planning and implementation of digital accessibility organizational-wide.

At this stage in the research, organizational approaches to digital accessibility are defined as institutions that have applied policies and procedures related to compliance with the Web Content Accessibility Guidelines and Universal Design for Learning across the four functional domains identified as policy, people, plans, and practices. Different perspectives on the issue were analyzed in the study. The investigation focused on the relationship patterns and management practices across the three institutions actively involved with digital accessibility implementation.

Research Questions

The central research question in the qualitative study was: what are the organizational approaches to digital accessibility in higher education?

Sub-questions regarding organizational approaches to digital accessibility in higher education included the following:

1. How do current digital accessibility implementation practices support reaching goals and plan maturity across the organization?

2. How does the maturity of an organization's digital accessibility plan relate to the adoption of practices across departments?

3. How does having a coordinated approach relate to the organization’s digital accessibility efforts?

Case Study Methodology

This study used a comparative multiple case study methodology situated in a constructivist paradigm with a realist perspective using clear boundaries for the scope of the investigation. The qualitative case study research design was chosen to develop an in-depth analysis and description of multiple cases not achievable through other qualitative approaches (Creswell & Poth, 2018). Stake (2006) and Yin (2018) base their approach to case study on a constructivist paradigm (Baxter & Jack, 2008). Constructivists assert that truth is relative and dependent on one’s perspective, and individuals seek to understand the world in which they live and work (Creswell & Poth, 2018). According to Creswell & Poth (2018), a case study can lead a researcher to look deeper into a range of complex views rather than narrowly apply the meanings to a few categories or ideas (Creswell & Poth, 2018). The constructivist approach recognizes the importance of the social construction of reality and the subjective nature of the human creation of meaning yet accepts an outright notion of objectivity (Baxter & Jack, 2008).

The realist orientation was applied to this case study that repeats similar experiences from different participants' perspectives presenting multiple realities (Yin, 2018). One of the advantages of using the constructivist approach is that it fosters "close collaboration between the participant and the researcher while enabling participants to tell their stories" (Baxter & Jack,

2008, p. 545). Through the stories told, the participants can describe their experience with the phenomenon being studied, enabling the researcher to understand better the participant's actions and views (Baxter & Jack, 2008).

Multiple case study research is a qualitative methodology that allows researchers to contrast individual topics and represents a range of qualities and extremes to understand a broad phenomenon without losing the distinctiveness of the single case study (Adams et al., 2022). Mills and Gay (2019 recommend a case study as an appropriate design for researchers interested in studying processes. Researchers use case study methodology to uncover a deeper understanding of phenomena rather than hypothesis testing (Merriam, 1998). Case studies aim to "gain a holistic understanding of a phenomenon by investigating complex systems not easily isolated from their context and impossible to study with other research methods" (Adams et al., 2022, p. 4). According to Yin (2018), a case study design should be used when the focus of the study is to answer the "how" and "why" qualitative questions.

An important application of a multiple case study is to explain the presumed causal links in real-world experiences that are too complex for a survey alone or experimental methods (Baxter & Jack, 2008). It is recommended to use a rigorous form of inquiry that justifies its use to those who expect a rigid research protocol, program evaluation, and data collection (Adams et al., 2022; Yin, 2018). The second application of a multiple case study describes the experience and the real-world context in which it occurred (Baxter & Jack, 2008). Thirdly, a multiple case study can elucidate specific topics within an evaluation in a descriptive way (Baxter & Jack, 2008). Moreover, case study research can enlighten situations where the evaluated experience has no single set of outcomes (Baxter & Jack, 2008).

The appealing aspects of a case study method can also save significant amounts of time and resources if problems are addressed at the beginning of the study (Adams et al., 2022). These issues include “the integrity of the researcher, volume of data, and time management” (Adams et al., 2022, p. 20). For this reason, researchers conducting a multiple case study need to move cautiously and slowly, select a manageable number of participants, conduct additional analyses of each case, and follow proper protocol for each comment (Adam et al., 2022; Creswell & Poth, 2018; Merriam, 1998).

A comparative case study was appropriate for this research because it allowed me to observe the process in its naturally occurring bounded systems at institutions with digital accessibility approaches already implemented. Through the research process, I made a holistic interpretation of each university based on a synthesized assessment and analysis of collected data.

Research Design

Several procedures are available for case study design. Mills and Gay (2019) identify several steps in approaching a case study applied to this research design. These include determining the research questions, defining the case under study, determining the theory development in case selection, determining the theoretical and conceptual framework of the case study, and determining the site selection.

Following recommendations by Creswell and Poth (2018) and Yin (2018), my approach included steps to develop procedures for conducting extensive data collection and drawing on multiple data sources. I employed a strategy to identify issues within each case and look for common themes across the cases (Yin, 2018). Following Creswell and Poth's (2018) recommended procedures, I conducted a holistic analysis of each case and a within-case analysis

of themes for each case, followed by a cross-case analysis looking for thematic analysis across cases. A detailed description of the cases emerged as I walked through the day-to-day rendering of activities, history, and chronology of events (Creswell & Poth, 2018). Merriam (1998) recommends a deep analysis of the case context or setting in which the case presents itself, which was carried out carefully in this study. The context of the case study research included an intensive investigation of organizational processes, events, plans, programs, activities, individuals, and other phenomena of interest in the university setting (Hancock et al., 2021).

Role of the Researcher

Interest in this topic stems from personal and professional experiences in educational technology, student success, and online course design. The most formative experience was being a graduate student diagnosed with a major neurocognitive disorder from a traumatic brain injury. I am a member of the disability community that benefits from accessible digital materials. In addition, the university's Center for Teaching and Learning, where I work, allowed me to experience a deep dive into distance education as a course reviewer, instructional designer, and later a digital accessibility specialist. This proved to be a valuable skill set in my current role as the Digital Accessibility Coordinator.

Since 2019, I have facilitated courses as a thought leader and subject matter expert for EDUCAUSE Learning Initiative (ELI) in digital accessibility program planning. In addition, I have given numerous presentations on *Digital Accessibility Practices and Approaches in Higher Education*, where feedback from other experts reinforced and fueled my interest in developing a framework for digital accessibility institutional planning. In 2019, I developed the *Jackson 4P Framework*. Each year I have received feedback from peers and continued to refine the elements within the four domains—people, practices, policies, and planning to develop a comprehensive

set of criteria for institutional planning for digital accessibility based on well-established practices and strategies. This study published the *Jackson 4P Framework* authored in 2019.

I have no business relationship with the interviewees or the institutions for which they are employed. I have a professional relationship with the case sites through EDUCAUSE and the International Association of Accessibility Professionals (IAAP). My relationship with the interviewees is one of a peer colleague. The advanced knowledge of digital accessibility planning and implementation has given me a background most helpful for narrowing the study's focus, identifying interviewees, and data analysis. Every attempt was made to present the research findings in a balanced way that considers possible or perceived bias.

Determining the Research Questions

In determining and framing the research questions for this study, I followed the recommendations by Hancock et al. (2021) for case studies. I identified a topic of interest and determined the appropriate institutions that best represented it, and conducted a careful analysis from multiple sources to understand what is known about the phenomenon under study. A foundational source for my research questions came from a study by Sinclair (2019), which looked at understanding organizational approaches to accessibility. One of the primary findings from the study is that participants are interested in well-established models to establish and run an organization-wide accessibility program and strategies for authoring accessible content.

Case Selection

I chose three case sites with similar criteria for size, location, and digital accessibility planning maturity. Rudenstam and Newton (2015) suggest selecting participants that are "likely to contribute to a deeper understanding of the questions or topic posed by the study" (p. 123). I chose three cases to compare to enable me to explore differences within and among case sites.

Following the recommendations by Baxter & Jackson (2008), I chose similar institutions to predict similar results across cases or compare results based on a theory (p. 549). Yin (2018) describes how multiple case studies can be used to either "predict similar results (a literal replication) or to predict contrasting results but for predictable reasons (a theoretical replication)" (p. 55).

The representative sites share common membership in EDUCAUSE, a nonprofit association whose mission is to advance higher education through information technology. The sites already have a digital accessibility policy and common practices and are in various stages of digital accessibility implementation; however, the maturity and context of each site are different.

Baxter & Jake (2008) recommend up to three or four sites of representative cases for inclusion in the qualitative study due to resource limitations. Creswell and Poth (2018) recommend selecting unusual cases for comparative case studies representing maximum variation, diverse cases, and multiple perspectives. Three universities in the United States Northern region were chosen because of the various strategies for implementing digital accessibility. Creswell and Poth (2018) argue for small group comparison of case sites because of "the potential to draw inaccessible conclusions," and this was the basis for choosing only three sites (p. 99). I followed Yin's (2018) suggestion and applied the logic of identical replication across sites and procedures. I employed a small number of sites looking for in-depth perspectives specifically related to digital accessibility program implementation to better control data volume and time management limits.

This multisite case study reviewed three public institutions. The first case site is a public flagship university located in the Northern Plains that is an R1 Carnegie classification research institution that offers associate, bachelor's, master's, and doctoral degrees. It offers programs

online and face-to-face, including business, social sciences, natural resources, conservation, and the visual and performing arts. They serve 10,962 students and have an active digital accessibility plan and policy.

The second case site is a flagship public university located in the Northern Plains, an R2 Carnegie classification research institution. It offers certificate, associate, bachelor, master's, and doctoral degrees in multiple modalities in programs in the arts and sciences, business, education, fine arts, health sciences, law, and medicine. They serve 11,000 students and have an active digital accessibility plan and policy.

The third case site is a public university located in the Great Lakes region that is an R2 research institution that offers undergraduate and graduate degrees in multiple modalities in business, education, engineering and technology, health sciences, law, arts and sciences, and the visual and performing arts. They serve approximately 15,000 students and have an active digital accessibility policy and planning.

Data Sources and Collection Procedures

Multiple data sources were used for rigorous research, including documentation, archival records, interviews, and physical artifacts.

Before beginning data collection, I had the university's Institutional Review Board (IRB) approval. Approval was obtained to access data at participating sites through an approved body for institutional review boards.

Interviews

The study included semi-structured virtual interviews with 4 or 5 administrators at each institution. The interview protocol is listed in Appendix B.

I maintained field notes after the interview and included any related observations in my researcher's journal to maintain validation (Creswell & Poth, 2018; Hancock et al., 2021; Yin, 2018). The interviewees at the three case sites all gave their permission and consented to participate. The individuals were chosen because they could provide access to the site and relevant materials and facilitate data collection, as Creswell & Poth (2018) recommends. The interview data collection method was secure and private.

As a first step, I built rapport with participants. Next, I learned more about the institutional culture, context, distortions, individual biases, and misinformation that might stem from participants' roles in their organization (Creswell & Poth, 2018).

I used a pilot test with a small sample to gather feedback when developing the interview questions and making any necessary revisions to the wording of the questions. Creswell & Poth (2018), Mills & Gay (2019), and Yin (2018) recommend a pilot test with a smaller sample group of respondents to see if the questions are understandable and make sense. The semi-structured interview questions were oriented strictly toward understanding approaches to digital accessibility program planning and implementation at the institution employed by the interviewees.

Interviewing participants allowed me to obtain and acquire essential data that could not be obtained from the survey, as recommended by Mills & Gay (2019). During the interview, participants were asked a series of semi-structured questions related to the research topic in this study for 45 to 60 minutes using a specified number of open question types contextualized for each person's role at the university. Each interviewed person was assigned a pseudonym to preserve confidentiality (Hancock et al., 2021). I asked questions that elicited the same information from each participant and adapted questions to get greater depth (Mills & Gay,

2019). Mills and Gay (2019) recommend including open-ended questions for a detailed response and closed questions such as yes or no, allowing for a brief answer.

A responsive interview model was applied during the study recommended by Rubin and Rubin (2012). Strictly adhering to tough interview questions does not elicit the needed in-depth material (Rubin & Rubin, 2012). Instead, I used semi-structured questioning that allowed me to adapt the questions to new information to gain the depth of insight required from the interviewees.

Responsive interviewing works well on individuals with informed opinions (Rubin & Rubin, 2012). The individuals selected for the interview were chosen because they have a vested interest in the outcome of digital accessibility on their campus, are considered knowledgeable in digital accessibility, and have been employed in higher education for most of their careers. Interviewees were purposefully chosen at each case site because of their familiarity and involvement with the topic at their institution and their knowledge of the subject matter. Creswell & Plott (2018) recommend using the responsive interviewing model to allow the researcher to tailor the questions asked to accommodate the various participant's roles, stages of interviewing, and phases of the research study. During the interviews, I elicited data related to roles, responsibilities, experiences, and activities. Each participant was asked the same set of semi-structured questions for every interview, with an adaptation of follow-up questions to elicit the depth of material required.

Interviews were transcribed automatically by built-in Zoom AI and Otter AI, and then I manually cleaned up the transcript to obtain 99% accuracy. Zoom and Otter AI offers verbatim audio recordings along with a written transcript. Hancock et al. (2021) describe an inductive, iterative process of reading and rereading the transcriptions to produce categories and

subcategories of information within the context of this study's research questions (p. 84). I will also use the transcript to recognize types and concepts and look for broad meanings imparted by the data.

Document Review

I reviewed electronic documents and artifacts from a pre-existing data source and a natural part of the research phenomena being studied. The digital and visual documents existed prior to the research study. Yin (2018) acknowledges the strengths and weaknesses of physical artifacts. However, they can be important in a case study (Yin, 2018). Physical data for this case study was extensive and came from multiple electronic sources to strengthen the validity and trustworthiness of the research and promote triangulation – a rigorous validation method (Creswell & Poth, 2018; Mills & Gay, 2019; Stake, 2006; Yin, 2018). The archival data analysis is detailed in Appendix E.

The document review played a prominent and vital role in this comparative case study. The most important use of documentation in case study research is to confirm and strengthen evidence from other sources (Yin, 2018). For example, documents help verify the correct titles or names of people, organizations, and affiliations mentioned in the interviews. In addition, Yin (2018) explains that records can provide precise details to validate the information, and inferences can be made from them, which can be used as clues worthy of further investigation.

The electronic documents supplemented and supported the material obtained from the interviews. The types of electronic public records used for the in-depth review and data analysis were strategic plans, policies, procedures, letters, electronic communication, video files, organizational affiliations, event announcements, websites, social media, public legal records, and training records.

After collecting the data, I coded it into categories, organized it into themes, and interpreted it based on recommended approaches (Creswell & Poth, 2018). The data was categorized using an inductive deductive coding scheme derived from the research questions and conceptual frameworks. (Hancock et al., 2021). Creswell & Poth (2018) Data analysis is achieved through coding data through an inductive deductive approach whereby researchers identify themes and patterns, formulate assertions, and suggest explanations to justify interpretations that lead to the generation of theories (Saldaña, 2013). The codebook from the data analysis of the interviews is shown in Table 5.

Data Analysis

I used and analyzed multiple data sources, as Yin (2018) and Creswell & Poth (2018) recommend. Data analysis included a rigorous review of the electronic documentation, interview transcripts, field notes, and research journal. I conducted a detailed analysis of each site's data, followed by a coding process and thematic analysis across all cases, as Baxter & Jack (2008) recommends. I followed Yin's (2018) recommendation by applying four data collection principles–use multiple evidence sources and apply triangulation, create a case study database, maintain a chain of proof, and exercise care when using data from social media sources. I also employed data analysis through the member-checking process to verify the validity and accuracy of the information (Merriam, 1998). The remote site investigation of the case involved evaluating what is going on currently, talking with relevant people, and examining related documents and materials that are part of the context of the study (Merriam, 1998).

Validation of Trustworthiness and Credibility

To ensure the validity and trustworthiness of a qualitative study, Shenton (2004) recommends that researchers address four criteria in their work - credibility, transferability,

dependability, and confirmability. I employed several techniques recommended by Shenton (2004) and Creswell and Poth (2018) to address credibility. First, I adopted an appropriate and well-recognized research methodology. Second, I became familiar with the culture of the participating case sites. Finally, I applied triangulation using multiple data sources, multiple sites, a wide range of informants, and document analysis (Creswell & Poth, 2018; Shenton, 2004). Yin (2018) describes triangulation as the "rationale for using multiple sources of evidence" (p. 126). Triangulation tests findings for consistency and verification from more than two data sources. It increases the chance of controlling for some of the multiple variables influencing the results in a qualitative study (Yin, 2018). Triangulation of data sources and types is a primary strategy that can be used for validity and reliability of findings in a multiple case study and would support the phenomena being viewed and explored from various perspectives (Baxter & Jack, 2008).

Tactics were employed to ensure the honesty and integrity of the interviewees, which included opportunities for interviewees to refuse to participate, involving only those who genuinely wanted to participate, and creating an environment where participants felt open to sharing without losing credibility. I used iterative questioning to uncover misinformation (Shenton, 2004). I welcomed peer scrutiny by my peers and academics. The use of reflexive commentary was also employed throughout the study to collect observations and questions and confirm my understanding of the information (Creswell & Poth, 2018; Shenton, 2004). I used my journal to guide my research as an informal learning tool, serve as a compendium of data collection approaches in the study, and record notes from interviews, peers, advisors, and meetings. Keeping a research journal also served as a validation tool for the evaluation results

that were collected and analyzed. It allowed me to record and connect my thought processes to applying the *Jackson 4P Framework* in a particular university context.

Shenton (2004) and Creswell & Poth (2018) argue that member checking is essential to bolster a study's credibility through data analysis. Member-checking or seeking participant feedback was applied in this case study with all interviewees. Member-checking is one way to help manage researcher bias and increase methodological rigor (Adams et al., 2022). According to Merriam (1998), member checking is another method of obtaining triangulation. When the data in this study was collected and analyzed, it was integrated into a member-checking process, whereby interpretations of the data were shared with the participants. The participants had the opportunity to review, discuss, and clarify my performance and to contribute new or additional perspectives on the issue under study (Baxter & Jake, 2008). Member checking also allows the participants to judge the accuracy and credibility of the account (Creswell & Poth, 2018). The interpretation of the human interview experience enhanced credibility, trustworthiness, and validity (Merriam, 1998). Stake (2018) suggested that member checking facilitates data validation through cross-verification from more than two sources because it elevates the research from thoughtful preparation to predicted skepticism.

Data Analysis Limitations

The following factors in this study have been considered to limit the validity and generalization of the study results. The elements of the study design were selected and included to minimize the impact of these limitations (Creswell & Poth, 2018).

1. The first limitation of this study is that it was limited to three cases. The small number of case sites selected is not representative of all levels of plan maturity and approaches to digital

accessibility compliance in higher education. Therefore, the results may not be generalizable beyond the three institutions selected for this study.

2. The second limitation is the small number of subjects at each institution selected for interviews based on their role and familiarity with digital accessibility. Therefore, the individuals interviewed in the study may not be generalizable beyond this study.

3. The third limitation is the bias that I bring to the study as a subject matter expert in digital accessibility and an individual with an invisible disability.

Summary

This case study provided a reliable design methodology to provide validated data and answered the primary research questions that formed the basis for this study. Institutions of higher education are interested in case studies methodology because of their possible transferability in understanding a particular phenomenon. Understanding implementation approaches to institutional-wide digital accessibility can improve planning, buy-in, effectiveness, risk management, and compliance goals. This case study applied trustworthy methods that resulted in valid findings described in the inductive analysis in Chapter 4 and the deductive analysis described in Chapter 5.

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Chapter 4

Inductive Analysis and Findings

This chapter presents the findings of this multiple case study of three medium-sized public university's approaches to implementing digital accessibility. It first presents a background description of the institution and the context of each case related to digital accessibility approaches used at each institution. It then presents the five main themes found during the inductive coding process. Chapter 5 presents details in relation to the research questions on how these themes fit within the larger body of literature and how the institutions approached digital accessibility through a deductive coding process. Finally, Chapter 5 ends with a discussion and suggestions in this area.

Background of Digital Accessibility Approaches

Each institution was analyzed from an administrative perspective that included unit activities and events associated with digital accessibility. This chapter presents the findings from the data analysis collected through individual interviews with administrative staff involved with digital accessibility at each institution, a review of archival documents, and excerpts from the researcher's journal. The list of individual participants is in Appendix D Table 9.

The institutions chosen for this study are all public institutions with similar demographics located in the northern tier of the United States and have an existing digital accessibility approach in place with Electronic Information Technology (EIT) accessibility roles and responsibilities defined.

Inductive Coding to Answer the Research Question

After conducting interviews and gathering resources from the three Institutions of Higher Education (IHE), an inductive coding process was utilized to uncover themes. Overall, five main

themes were discovered in relation to the main research question: What are the organizational approaches to digital accessibility in higher education?

The first theme was that institutional administration of digital accessibility implementation plays an important role in defining how digital accessibility is approached. The second theme highlighted expectations and institutional goals for digital accessibility. The third theme highlighted compliance and risk management factors. The fourth theme highlighted challenges and concerns with communication, buy-in, and training across the institution. Finally, the fifth theme highlighted the resources that support accessibility efforts. Figure 3 depicts the five themes visually and their interconnectedness.

Figure 3

IHE Three Site Case Study Emergent Themes and Their Interconnectedness

Participants

Table 1 provides demographic information for each of the three IHE participants. Pseudonyms were assigned for each IHE participant and used throughout the study.

Table 1

Institution of Higher Education Participant Demographics

Campus Participant	Total Enrollment	Carnegie Research Classification
IHE1	10,000	R2
IHE2	11,000	R1
IHE3	14,000	R2

Participants were recommended to the researcher by the primary contact at each institution. Primary interviews were conducted with IHE participants active in digital accessibility efforts during the Spring 2023 semester. Individual participants represented roles and responsibilities within key areas—website management, application management, information technology services, disability services, professional development, instructional design, library technology, digital accessibility, and the Center for Teaching and Learning. In addition, interviewing individuals in varying administrative roles across the university allowed for a better understanding of how digital accessibility was viewed and administered across the various departments at the university. Of particular interest was understanding how the different departments coordinated digital accessibility efforts.

The data sources used in this study are depicted in table 2. According to Stake (2006), multiple data sources promote vigorous interpretation to enhance the understanding of a phenomenon.

Table 2

Data Collection Sources

Source	Campus IHE1	Campus IHE2	Campus IHE3
Interviews	**5**	**4**	**5**
Researcher Journal	**1**	**1**	**1**
Archival Documents	**10**	**15**	**10**

A visual of the interview analysis process using the four J4P frames is shown in Table 3. Interview transcripts were analyzed, looking for descriptive comments in the four frames among the participant responses to each interview question.

Table 3

Analysis of Interview Participant Questions Using the J4P frames

Question Number	Question	J4P frames
Interview question 1	What was the process your institution used for digital accessibility planning?	Planning
Interview question 2	What was the process your institution used when making its digital accessibility policy?	Policy
Interview question 3	How does your institution carry out digital accessibility practices?	Practices
Interview question 4	How does your institution involve people in digital accessibility efforts?	People

Archival Document Data

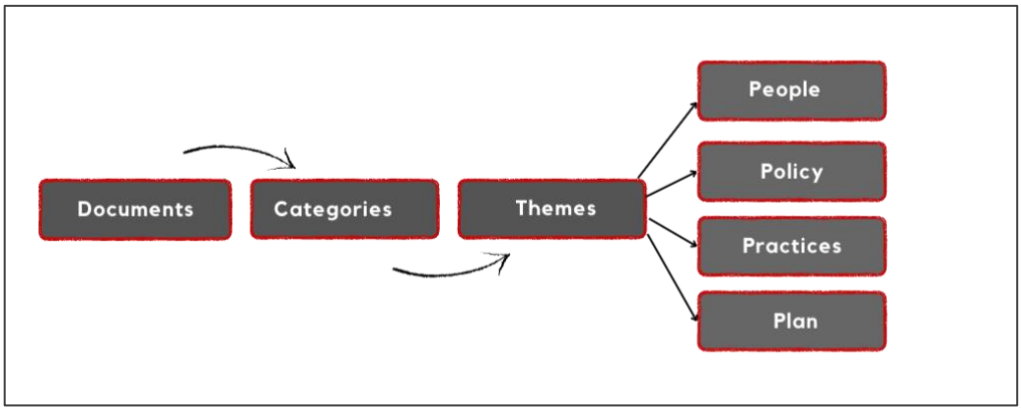
In addition to interviews, archival document data was used to support and validate the information that emerged in the interviews. Archival document data is information previously recorded and collected from publicly available sources. Types of archival document data included strategic plans, policies, biographies, government documents, committee meetings, policies, websites, training documents, communication documents, and journal articles.

Following the recommendations of Yin (2018), the archival data documents were examined by placing significant comments into an excel table delineated by campus and date. Categories and themes observed in the comments were notated in one column for the category and one for the theme. Multiple strategies are employed to reduce the likelihood of interpretation challenges, including redundancy of data gathering (Stake, 2006). A challenge associated with

content analysis of a large amount of data is categorizing and coding unstructured data satisfactorily (Saldaña, 2013). The J4P (2020) four frames provided a lens through which to categorize the codes and themes observed. A diagram of the analysis process of archival documents is shown in Figure 4.

Figure 4

Analysis of Archival Documents Using J4P (2020) Four Frames



Researcher Journal

Throughout the review of interviews and archival documents, I kept a researcher journal of my impressions of the research and analysis. In general, awareness of digital accessibility efforts varied among individual participants who worked in administrative roles at the institution. Individual participants were concerned about how effectively digital accessibility practices were uniformly applied across departments. There was no written strategic plan for most departments specifying digital accessibility goals. There was little evidence of how well digital accessibility goals are being met campus-wide. The mid-level administrators of the organization primarily lead campus efforts for digital accessibility and do the bulk of the advocating. The participants

expressed general concern about how effective their efforts are in reducing barriers for students with disabilities largely because organizational-wide efforts are not being tracked.

Inductive Analysis

An analysis of 14 individual interviews and 52 public archival documents across three institutions of higher education was conducted during the Spring 2023 semester. Table 4 depicts the elements of the research analysis process.

Table 4

Research questions, Units of Analysis, Sources, & Collection Methods

Research Question	Institution	Individual Participant	Data Source	Collection Methods
What are the organizational approaches to digital accessibility in higher education?	IHE1	1. Digital Accessibility Coordinator	Audio transcription of interviews	Interviews
		2. Chief Information Officer		
		3. Distance Librarian		
		4. Director Center for Teaching and Learning		
		5. ITS Application Manager/Web Manager		
	IHE2	6. Chief Information Officer		
		7. Web Support Specialist		
		8. Office of Disability & Equity	Archival documents	Public website access retrieval
		9. Alternative Formats Specialist		
	IHE3	10. Director of Center for Teaching Excellence		
		11. Student Success Librarian		
		12. IT Accessibility Officer		
		13. Instructional Design Director		
		14. Web Communications Manager		

IHE1 Case Study

Background

IHE1 is a public, medium-sized, liberal arts institution in the upper plains of the United States with graduate and undergraduate programs. The university offers over 60 online degree

programs through a centralized learning management system. IHE1 is an R2 Carnegie classification research institution with approximately 1000 staff members and 450 faculty across seven schools and colleges with two locations. They are governed by a state board of regents system and operate under the Responsibility Center Management (RCM) budget model.

IHE1 does not have instructional designers but trains faculty on how to design their courses through a Center for Teaching and Learning, providing professional development in digital accessibility. The institution has a dedicated Office of Disability Services that is responsible for processing academic accommodations, which is still the primary approach for students with disabilities to receive academic assistance in the classroom or online. IHE1 has seen an increase in enrolled students with more complex disabilities following the COVID-19 pandemic.

Case IHE1 Context of Approaches to Digital Accessibility

IHE1 underwent a Department of Education Office of Civil Rights investigation in 2018 following an alleged complaint of inaccessible web pages and online programs that violates Section 504 of the Rehabilitation Act. IHE1 adopted a centralized and coordinated approach to digital accessibility efforts in 2020 at the recommendation of a 14-member digital accessibility committee (DAC) formed in 2019 with representation from students, faculty, academic leadership, and administrators (Artifact 10). A digital accessibility policy identifying university minimum standards for digital content and software procurement was implemented in 2019. In addition, a digital accessibility coordinator was hired in 2020 from within the organization to oversee and report on the centralized and coordinated administrative efforts among schools and colleges (Artifact 30). Institutional leaders convened the committee to evaluate existing digital accessibility policies and practices and identify gaps and improvement areas.

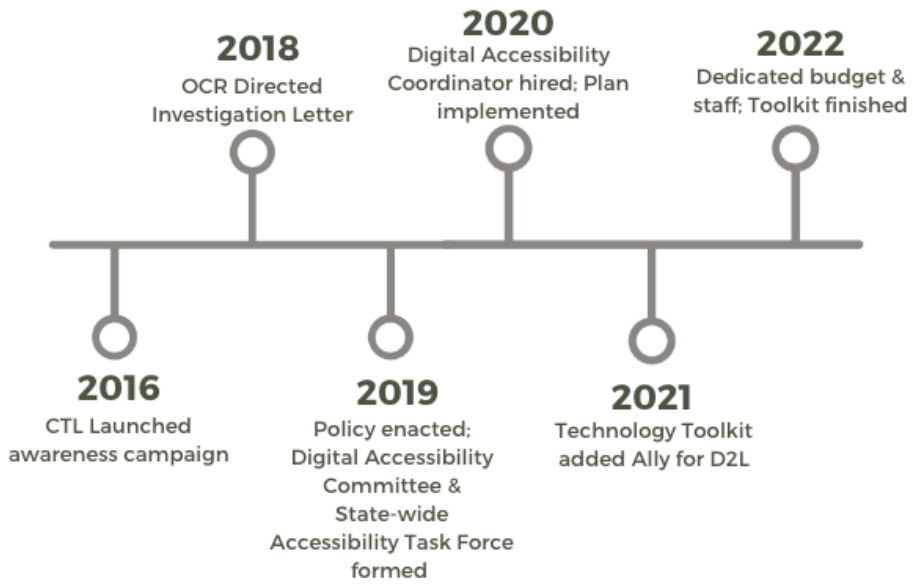
Before the OCR complaint, the Center for Teaching and Learning (CTL) responded in 2016 to the revised Section 508 Refresh Law by leading internal and external discussions at conferences to proactively answer the big question: What is the difference between accessibility and accommodation? Lagrow (2017) posits that

> although the original intent of Section 508 [ICT Refresh] was to provide accessibility in the federal sector, it has been widely accepted that colleges and universities are subject to its requirements under Title II because they almost universally receive some form of federal funding" (para. 1).

The response to the ICT Refresh law and increased OCR investigations was particularly interesting from the positionality of *leading from the middle* because it was eventually effective in reaching greater administrative buy-in at the institution from all levels of the organization. The CTL reviewed and analyzed other university responses to lawsuits, OCR investigations, and consent decrees looking for common implementation best practices and models. As a result of IHE1's research findings, the CTL promoted a series of proactive steps that faculty and staff could take in order to avoid similar challenges that emerged from other OCR investigation and cases. The CTL became the *campus voice* for digital accessibility through launching an initiative that promoted digital accessibility practices and Universal Design for Learning (UDL) principles. The awareness campaign eventually developed a transparent roadmap toward adopting inclusive design practices in online courses and public-facing webpages (artifact 7). Figure 5 depicts the timeline toward compliance goals for IHE1.

Figure 5

IHE1 Timeline Toward Digital Accessibility Maturity



IHE1 Within Case Theme Analysis

Five themes emerged in the inductive data analysis phase for IHE1 as described below.

Implementation Approaches. IHE1 operates in a hub and spoke coordinated organizational structure for digital accessibility administration, which allows for centralized performance tracking and reporting. A centralized office for digital accessibility located in the Center for Teaching and Learning (CTL) oversees adherence to university accessibility standards, which allows for information transfer across all institutional stakeholders. The centralized office has seen an increase in meeting accessibility compliance goals over the past two years since the coordinator was hired. The digital accessibility coordinator gave an overview of a centralized approach at a training noting, “a centralized approach provides a better way to set benchmarks, measure success, track progress, and record outcomes across the institution” (Artifact 29). A coordinated approach across units also helps with centralized planning and hiring needs. Becky from the Center for Teaching and Learning noted, “Having more centralized planning with the capacity to support the rest of the campus has been invaluable in moving the

needle toward more accessible content." In addition, a coordinated approach leads to relationship building and partnerships. Mary noted, "Don't work in a silo. You need everybody to be on board."

IHE1 has been intentional about centralizing all digital accessibility resources, including assistive technology support, to allow for a kind of *one-stop shop* for students, staff, and faculty. A central mailbox account *UDL@* routes all requests to a dedicated team of experts in the same campus unit. Some noticeable benefits of a centralized digital accessibility office with dedicated full-time staff are the ability to track resolutions, collaborate, cross-train, engage in problem-solving, conduct research, reporting, and workload sharing.

The digital accessibility UDL team is able to track workflow using the ITS-managed Team Dynamix (TD) system for managing help requests and software reviews. Tracking help requests and service tickets allows the digital accessibility office to substantiate their need for continued funding and importance to the university community.

The drawback to a centralized approach for the IHE1 is finding and keeping qualified staff, continual cross-training on changing technologies and standards, limited resources, annual budget requests, reliance on a coordinator, and limited focus to staff and faculty support. The general attitude at IHE1 around all accessibility problems is that it is the CTL responsibility to fund accessibility and find solutions to the problems. The CTL does not have the expertise to fix and find all the solutions for all digital spaces for the university.

Expectations and Goals. The Digital Accessibility Committee started setting institutional benchmarks and expectations in 2019 driven by the goal to meet the new digital accessibility policy and the revised state board of regents online course standards for accessibility (artifacts 3 & 12). The institutional goals for digital accessibility were primarily

driven by risk management to avoid any more future complaints alleging Section 504 and ADA discrimination in digital spaces. As part of the risk management approach, high accountability was built into the practices and plan for both faculty and staff. This approach resulted in a high level of resistance from faculty and low buy-in. In response, the digital accessibility team crafted messaging, training, and support that promoted *mindful administrative practices* that encouraged it as the *right thing to do* for people with disabilities and to increase opportunities for academic success.

In 2020, the institution set lofty goals for all online courses and public-facing websites to meet minimum accessibility standards against WCAG. In response, the institution started investing in a suite of automated tools dubbed a *digital accessibility technical toolbox* that provided real-time scanning of online course content and institutional website pages with automated feedback for suggested fixes, which led to quicker identification of issues. Blackboard Ally and Siteimprove were two primary investments to support university goals.

Accessibility goals at IHE1 are driven by the institutional digital accessibility policy and tied to institutional strategic goals and available resources. Digital accessibility is included in at least one school's strategic plan to “increase the number of courses that meet or exceed accessibility goals set forth by the institution” (Artifact 2). IHE1 began setting consecutively higher goals and expectations for compliance each year to move toward maturity. Setting expectations also takes funding. Initially, the digital accessibility committee was expected to implement digital accessibility compliance with no budget, however a dedicated budget was created 3 years into initiative. Despite budget constraints, Mary in the university library noted, "if we need to buy something, we’ll figure out how to pay for it."

Measuring and tracking the accessibility of courses and website accessibility through a centralized office allowed for responsive targeted feedback in underperforming areas that directly led to reaching goals ahead of the estimated timelines. Becky from the CTL noted, “Having a centralized office with involvement from all over campus helped create a necessary framework.” The initial expectation was that on a specific date, everything going forward must meet WCAG 2.1 level AA, or it is not going on the public website or in an online course. Jane the digital accessibility coordinator noted, “The easy-to-address *low-hanging fruit* was done first.” The expectation also applied to software procurement. Legacy content was only expected to be remediated if it was critical to the programming and services of the university. Pam, a website manager with ITS, notes that digital accessibility "is important, and this needs to be a front-facing issue rather than an after-the-fact thing."

IHE1 responded with goals to identify dedicated specialists to help train faculty and staff within each department and form a remediation team of student workers. However, most departments do not have their own digital accessibility goals, so they adopt the goals passed down from the Digital Accessibility Committee. Pam, a web manager, notes: "I do not think we have an overarching benchmark or plan for the department. It is more project-by-project, application by application." Having an overarching plan for the university gave the department direction in the absence of its own plan.

Communication and Buy-in. Frequent and relevant communication and outreach are essential for building awareness among faculty and staff at IHE1 who struggle to find the time to learn how to make accessible digital content. Some faculty resist learning new course design practices because they do not understand the purpose of it. Becky from the Center for Teaching and Learning noted:

Some faculty and staff need to understand why this is needed and may not have the time or desire to truly register the importance of this work and understand how this work can help improve the learning environment for all students.

The university UDL team communicates digital accessibility expectations, training opportunities, and policies through regular meetings with academic leadership and campus-wide communications by academic affairs and university relations. In addition, Becky notes, "Reporting to Dean's Council and Provost Council is also a mechanism by which we communicate."

One way to improve faculty awareness of digital accessibility best practices is to place faculty mentors in every school and college for peer-to-peer support. Becky notes, "The faculty mentor program also helps communicate with individual faculty, as mentors provide training and work with their colleagues on an as-needed basis." Challenges to the faculty mentor program are turnover, continued funding for paid incentives, and low faculty engagement.

The Center for Teaching Learning and University Libraries have their own digital accessibility initiative, which helps with department-level buy-in. Regular notifications are sent through campus-wide email communication, web pages, and training events. Mary, the technology librarian, explained, "We've got them [digital accessibility] expectations publicly posted on the website, in our statement of services, and our policies and procedures on the website."

Faculty at IHE1 struggled with not being able to find the self-help training they needed, so the university moved all training materials related to digital accessibility online into a centralized knowledge base. Pam noted, "Knowledge base reference articles guide faculty through all the steps they need." Training on accessibility for all new faculty adds additional

stress and time upfront, but later it leads to higher course scores. IHE1 offers asynchronous training modules, video tutorials, and written tutorials customized for the university to facilitate just-in-time learning. Introducing faculty to the available tools and resources to make their own materials accessible reduces the burden on the digital accessibility office to do the work for them. An important resource developed by IHE1 to facilitate *do-it-yourself* practices is the *digital accessibility technical toolkit* provided by the CTL to all faculty and staff.

Compliance, Policy, and Standards. IHE1 has prioritized digital accessibility for risk management reasons to meet Section 504 and ADA federal laws. Lucy from ITS noted, "I think 508 compliance was what made us start paying attention to this issue." After the Department of Education's OCR-directed investigation, the institution implemented several changes, including adopting web accessibility standards, software compliance reviews, and publishing a digital accessibility policy. These were implemented as a preventive action stance to avoid future complaints. However, the policies are not mandated by campus leadership. They function more as a statement of goals or guidelines and a public position statement. Jane from the digital accessibility office notes that “policies are only as good as the language is written and accountability factors.”

IHE1 adopted a digital accessibility policy and the WCAG 2.0 level AA as the official digital accessibility standard for the institution. Jane from the accessibility office noted, “Our digital accessibility policy was drafted five years ago by a committee and approved by legal counsel after reviewing approved statements from other institutions that had settled a Department of Education Office of Civil Rights complaint or legal complaint with the Department of Justice (DOJ).” IHE1 legal counsel recommended reviewing higher education cases that reached a settlement agreement. In addition to the institutional accessibility policy, other departments are

drafting their own accessibility policies. Mary noted, “Because we belong to the American Library Association, … it has been important to us in the policies and procedures that we set.”

In order to reduce risk and improve compliance, ITS adopted the HECVAT as a framework (EDUCAUSE, 2021) for ensuring that all software is reviewed for accessibility before it is purchased. The current procedure requires that all software purchases undergo both a security review and an accessibility review. The HECVAT is an *all-in-one* tool that allows the institution to conduct a compliance evaluation. Reviews are recorded in a centralized database.

IHE1 acknowledges that technology and standards constantly change, making compliance more challenging. For this reason, compliance plans need to be flexible, and policies should not be overly prescriptive. Public higher education is not designed to pivot quickly to change. Jane from the accessibility office explains that “the university aims for *progress over perfection*, not 100% compliance.” Pam says, “Accessibility is a living thing. It is constantly changing. It is not something that we can hit the goal and then stop. Just because we are accessible today does not mean we are accessible tomorrow.”

Resources. The digital accessibility coordinator and digital accessibility specialist sit within the Center for Teaching and Learning, which serves as the hub for training on the Web Content Accessibility Guidelines (WCAG), Universal Design for Learning initiatives, online course quality assurance, assistive technology support to students, and digital accessibility compliance. The digital accessibility coordinator also represents the university on the state board of regent's task force for digital accessibility. Becky from the CTL notes, “With the digital accessibility coordinator position, all efforts start and flow through this office.”

Once policies and goals are in place, an essential next step in planning for digital accessibility is finding the right resources, funding the resources, and budgeting for future needs.

The budget needs to align with university goals for digital accessibility. For IHE1, one primary goal was to ensure that all public-facing webpages meet the industry benchmark average for higher education set by SiteImprove software and pass functionality testing. Jane from the digital accessibility office explained, "to meet our goals, the digital accessibility committee had to research, identify, and recommend the tools and resources needed to reach university goals." Because the work spanned all departments, using a shared resource model made sense so all departments could access the same tools and training for a consistently reliable approach.

IHE1 created a dedicated digital accessibility budget to fund infrastructure that is sustainable and supports resources long term. Replacing an annually renewed budget with a permanent budget for digital accessibility is a priority for IHE1 in order to maintain service provider contracts, salaries, tools, and resources that all help with compliance.

The university promotes common practices and tools at no cost or low cost to faculty and staff. The university operated for the first two years without any budget for digital accessibility. It funded the 3rd and 4th years with COVID-19 relief funds, and now in year 5, it has a dedicated, centralized budget for digital accessibility. Jane from the digital accessibility office notes, “most remediation tools, salaries, and third-party services used such as real-time captions and PDF remediation are paid through a centralized budget.” Budgeting for digital accessibility is a complex task if done in a siloed fashion, but when IHE1 moved to a coordinated, centralized approach, the institution saved thousands of dollars by eliminating redundancies and pooling resources resulting in better service and lower costs. Becky noted, “There are also economies of scale in the requisitioning and purchasing necessary software tools and building training programs.” As an example of cost savings, Jane from the Office of Digital Accessibility noted

that “a campus-wide contract for captioning services with a pool of minutes available lowered individual department captioning costs by up to 50%.”

The standards adopted by the university drive the types of tools that are needed to support the practices and policies. Lucy from the ITS department noted, “I think it's imperative to develop some standards, get tools in place, and get all the faculty on the same page. Otherwise, there will be no way for us to manage this.”

To facilitate awareness and ease of adoption, IHE1 put together a *digital toolbox* and created a *digital accessibility resource guide* to standardize practices and tools across the institution (Artifact 6). The tools and expectations are communicated campus-wide in a comprehensive *digital accessibility toolbox* to faculty and staff, including tutorials, checklists, free software access, and technical support provided by subject matter experts.

For IHE1 staff and faculty, integrating digital accessibility into their daily workflow and teaching load is challenging due to a lack of knowledge and time. Libraries have unique digital accessibility resource needs that are higher than other places on campus due to the large volume of public data and information in digital and print formats. Sharing campus resources with libraries reduces the workload on library staff. Mary from University Libraries notes, “I am struggling with who is going to be responsible, what is the timeline, and how it is going to get done." Staff and faculty are being asked to do more work in the same amount of time at the same pay. Becky from the CTL noted, “Everyone is being asked to do more with less.” Pam notes that the onboarding process for new staff in her department is still lagging and segmented for digital accessibility training, “Our onboarding process is all over the map because it is very segmented for accessibility.”

Not all departments feel *plugged into* digital accessibility efforts; as Lucy in ITS notes, "we need to do more and involve more people in those efforts." Jane explains how helpful it is to have a "dedicated team of trained professionals located in the Center for Teaching and Learning that help with testing, assistive technology, training, and remediation." Having dedicated experts in digital accessibility available for help and support has made a positive impact; however, the office is getting overwhelmed with requests since it has started providing remediation services campus-wide. Becky from the CTL notes, "One of our largest barriers right now is needing more resources to maintain and advance our work." IHE1 has ongoing resource challenges including human labor to keep up with the remediation workload, insufficient support for student assistive technology needs, funding, and inconsistent communication and messaging across departments. In response, a pool of student workers was hired and trained to provide free remediation help to faculty and staff to offset the explosion of remediation requests for complex digital documents.

IHE2 Case Study

Background

IHE2 is a public, medium-sized, liberal arts institution located in the northern tier of the United States with graduate and undergraduate programs. IHE2 is a coeducational doctoral university governed by a state university system and offers several fully online degree programs through a centralized learning management system. The university is an R1 Carnegie classification research institution across several schools and colleges. After shrinking enrollments, budget cuts, and staff retirements in the last decade, IHE2 is seeing an increase in enrolled students following the COVID-19 pandemic and the need for filling open positions. The university has a dedicated Office of Disability Services that processes academic accommodations and provides training and an access technology office within ITS that processes requests for

technical support and digital remediation. The ITS department is responsible for processing software accessibility conformance reviews. The office equivalent to a center for teaching and learning is responsible for carrying out digital accessibility training for all faculty and staff; however, the director did not participate in this study. Data analysis related to instructional design and faculty training was obtained from public online information.

Case IHE2 Context of Approaches to Digital Accessibility

IHE2 has been involved in digital accessibility efforts for over a decade, kickstarted by a legal complaint. The university underwent a Department of Education Office of Civil Rights investigation and DOJ lawsuit following an alleged complaint of inaccessible web pages and online programming that violates Section 504 of the Rehabilitation Act and ADA laws. In response, the university committed to developing comprehensive administrative policies and procedures to ensure that all the university's electronic and information technology can be used by individuals who are blind and others with disabilities (artifact 22).

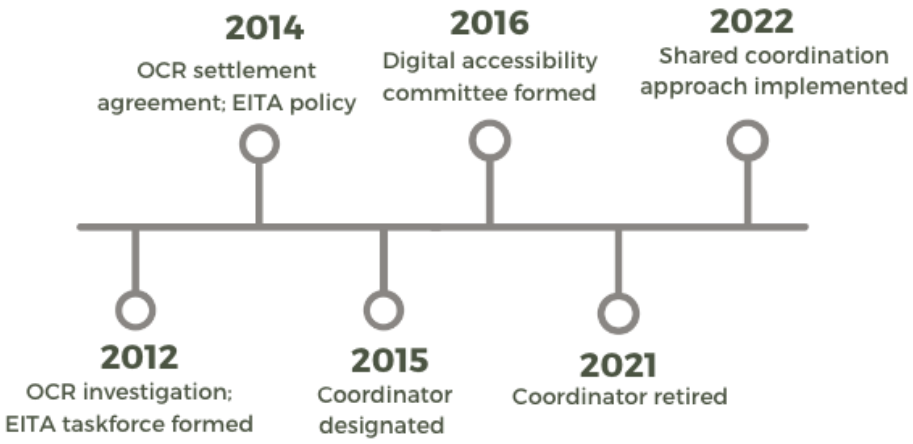
An electronic and information technology accessibility task force comprised of stakeholders across units was formed to investigate the complaint, conduct a root cause analysis, and develop an action plan that led to the development of the policies and practices.

Initial steps taken by the university included developing an electronic information technology (EIT) policy, software procurement practices, training faculty and staff on the policy and practices, and providing audio and Braille output to work with the technology used by people who are blind, such as text-to-speech screen reader software and electronic Braille displays. The settlement agreement covered all technology used in all education and campus life aspects, including classrooms, online courses, library services, and on-campus kiosk-delivered services (artifact 22).

IHE2 responded to the complaint by appointing an EIT coordinator within ITS to implement digital accessibility practices and coordinate a plan across units. The university developed a budget for funding digital accessibility and implemented a successful centralized approach for training, procuring accessible software, and remediation of digital materials. However, when the EIT coordinator retired, the position was never refilled, and as a result, the university re-entered a more decentralized approach with shared coordination across units. Layoffs and budget cuts fueled the ITS department's survival mode for a time, and digital accessibility essentially became a *reactive*, *after-the-fact* response. Figure 6 depicts the digital accessibility timeline for IHE2.

Figure 6

IHE2 Timeline Toward Digital Accessibility Maturity



IHE2 Within Case Theme Analysis

Five themes emerged in the inductive data analysis phase for IHE2, discussed in the following section.

Implementation Approaches. IHE2 implements digital accessibility from a shared approach, not centralized through one head office since the retirement of the former coordinator. This approach allows departments to be tasked with specific roles and responsibilities for the entire institution. There is not one department that does everything, but rather the workload is coordinated at the unit level across departments with ITS having the heaviest workload and biggest budget for accessibility compliance. Lisa from the university libraries notes, “We coordinate with other offices and the ADA team to ensure accessibility.”

The digital accessibility efforts at the university are driven by two main factors – risk management and inclusion efforts. The director of disability services acts as the current digital accessibility *champion* on campus. Administrative processes, accessibility compliance to federal and state laws, and inclusive design principles primarily drive IHE2 digital accessibility efforts. Tim notes, "I think because we have been doing it for so long, it has become ingrained in everything we do. It is part of our procurement process, education, outreach, and faculty onboarding." The institution has an office of learning and development for the entire organization that provides training and professional development for staff and faculty on equity mindfulness, accessibility policies, and inclusive design practices for online and face-to-face courses. To meet university policy, state, and federal laws, all employees must create, obtain, and maintain electronic documents, websites, media, software, and hardware to ensure it is accessible (artifact 52). Therefore, all personnel are required to be trained in digital accessibility which is important for the institution in its goal of reducing risk.

The university emphasizes best practices and procedures in establishing an accessibility infrastructure led primarily by experts within the information technology systems department accessibility office and office of disability and equity services. The university started out with a

centralized approach to digital accessibility led by a campus EIT coordinator, also referred to as the campus *champion* for accessibility, who recently retired. The EIT coordinator was located within ITS and was known for forming strong relationships with the Office of Disability and Equity, ITS, the office of learning and development, the accessibility committee, and student assistive technology support. Since her departure, the coordinator position has not been filled. The implementation approach that the coordinator advocated for has remained a part of the culture of the organization, and in the hearts of the people, but the accountability piece has seen a setback. Tina from disability services notes, “I see where we have lost a bit of ground.”

The digital accessibility approach for the university started as a centralized effort, then evolved into a more shared approach without an EIT coordinator. The university required in the past that the EIT coordinator and digital accessibility committee coordinate campus processes to ensure campus accessibility. Under a coordinated effort, the university has multiple people leading the charge from different areas - people who know a lot about the technology, people who know compliance, and people who are passionate about the equity and inclusion reasons behind it.

Tina from the Office of Disability and Equity notes, “Our current mission and focus are to decrease accountability for accommodations.” The university has been thrust back into a largely reactive position. Tim from ITS notes, “We are doing a really good job at gate-keeping and being reactive, but I think with a strong planning effort, we could turn it into a more proactive approach." Tina agrees with Tim, saying, "I would say where we are now can be considered reactive. So, what I mean by that is students request something, then we pursue it." The university would like to move from a reactive response to a proactive approach. Tina explains from her department's perspective, “We have these priorities for action for the overall

campus. While it is not specifically stated on the website, we are working on this in our internal practices."

As part of a proactive approach to digital accessibility, the Office of Disability and Equity promotes *Universal Design for Learning* principles and inclusive design practices for courses. IHE2 sees Universal Design for Learning as a complementary set of practices to the Web Content Accessibility Guidelines (WCAG) for making courses more accessible at IHE2 (artifact 27). Tina from disability services states, "To me, access … benefits everyone." University-adopted practices require that courses are accessible, and it is up to the instructional designers to ensure that LMS-hosted courses are accessible (artifact 16).

The Office of Disability Services approaches digital accessibility from a social justice lens, promoting the motto that *it is the right thing to do* for students. The office applies an existing social justice framework to approaching digital accessibility from the equity and inclusion perspective (artifact 24). Tina from disability services explained that the "*Just Practice framework* (Finn, 2022) as applied to examine the meaning, context, power, history, and possibility related to the university's OCR complaint to create a more accessible and equitable educational environment for students with disabilities." IHE2 has more recently responded to the needs of underserved students, including those with disabilities, through a diversity, equity, and inclusion (DEI) plan that aligns with the university's strategic plan (artifact 13). Tim says, "there is a strong culture for ensuring that everyone has equal opportunity."

Expectations and Goals. Setting organizational-level benchmarks for digital accessibility is usually the responsibility of the EIT coordinator or a digital accessibility committee (artifact 18). At IHE2, this approach became inactive when the coordinator retired, and as a result, goal setting and planning were left up to the individual departments. Tim

explained, "when we actually had that manager position staffed, they were the driving force for a lot of those efforts." The ADA team is being reactivated, and Tina hopes that "the ADA team will identify areas we can either improve or things that we would consider consistent monitoring."

It is foundational to the IHE2 planning efforts that the accessibility committee regularly convenes to evaluate existing digital accessibility goals and expectations and identify gaps and areas for improvement. Tina from the Office of Disability and Equity noted, "The committee left when our web developer left because he was heading the committee, so we have been for a year at least without a committee now." Strategic planning around digital accessibility is starting to come back to a higher level of importance. Tim from ITS noted, "We do not really have a plan right now, …but we are embarking on a strategic planning effort now that definitely includes accessibility into that umbrella."

Communication and Buy-In. Communicating digital accessibility policies and procedures leads to knowledge and buy-in of the adopted practices for IHE2. The university supports that public policies should communicate the university's position and what they are doing. At IHE2, university-wide standards, policies, goals, and expectations are clearly stated on its website to promote knowledge-building and awareness of the expectations, and opportunities for training.

IHE2 believes that developing a culture of accessibility includes all university partners. Developing relationships and allies across academic and structural units is vital for buy-in and helps share information. For example, Tina from disability services acknowledges that "having a really strong ally there [in ITS] is important." Administrators include campus leaders at many

levels. Together they establish the institutional culture of accessibility, making it a strategic priority and creating robust communication that leads to building awareness and knowledge.

IHE2 believes that the purpose of digital accessibility should be communicated and advocated in everything they do. A holistic approach understands that information is perceived differently by different roles at the university. Campus administrators decide how accessibility will be communicated and who is responsible. IHE2 struggles with centralized communication that reduces the ambiguity of information from many different people and places. The university would like to have more consistent, clear communication to faculty and staff regarding digital accessibility best practices and expectations. When asked who is responsible for campus-wide communication, Tina responded, "We do not have one right now, and I will probably be the closest." Some administrators at IHE2 are modeling proactive digital accessibility best practices that can lead to buy-in throughout the organization, and others are not.

Most people know digital accessibility, but it may not be adopted widely. Lisa from ITS responded, "It feels like most people know about the need for accessibility, and it is regularly stressed and taught." However, communication of best practices is only relevant to faculty and staff if they know why they need to do it. Jeff states, "They still consider it kind of a burden and hassle." He notes that to help people understand it, "just explain why this stuff is important." Communicating a simple step-by-step approach to why accessibility is important and establishing baseline practices is critical to adoption. Tim says, "I think there has been more adoption, but I definitely think people forget that some of those things [practices and tools] exist." Simplified and standardized training that clarifies points of ambiguity is essential, especially for new staff and faculty. Tina shared, "At the end of a presentation, when we got

through all the fears and concerns, people say, “Is this really all we have to do? And I say, “that is really all you have to do.”

Compliance, Policy, and Standards. The university aims to meet university EIT policy, state, and federal laws. The IHE2 procurement policy requires adherence to Section 508 and WCAG 2.0 level AA standards for software purchases. Accessibility conformance reviews (ACR) are conducted by a qualified ITS team to reduce risk to the university and ensure students using assistive technology can access university online programs and services (artifact 17).

Institutional administrators and leaders guide the development of campus-wide digital accessibility policies and procedures through a policy-making process led by a committee with stakeholder input (artifact 19). The policy-making process for digital accessibility takes a long time to complete because of university processes. Tina notes that “we spent probably about two years, and objectively, it took longer than that, but I would say two years in terms of getting it written, approved, and doing the training."

The purpose for IHE2 enacting an overarching accessibility policy was originally to lead the university toward higher accessibility compliance and maturity. The policies gave the university direction by outlining the procedures and practices to be followed by staff and faculty (artifact 15). The stated policy and procedures included a statement of commitment, roles, responsibilities, and the scope of the policy. Tina emphasizes, “Have a policy and the proper procedure.”

Compliance tracking leads to understanding the effectiveness of digital accessibility practices and setting benchmarks. Tina shared, “We did [track] for a number of years.” Tracking compliance at IHE2 is used to understand gaps and mitigate risks to the university of receiving legal complaints. It can also identify units and areas that are doing well. It provides a way to

justify the usefulness of purchased tools and resources for the university. The university does have specific software they use for automated scanning of the website to check for WCAG compliance, but it does not appear to be tracked over time. IHE2 does not have a specific plan for tracking, monitoring, and reporting to leadership the effectiveness of current digital accessibility approaches. Tim says, "That is possibly the next step for our accessibility team – starting to benchmark … so that we can track."

Administrators *leading from the middle* are largely responsible for advocating digital accessibility compliance backed by an EIT policy that applies to all the university's electronic and information technology and extends to procurement, online courses, software development, implementation, and website maintenance (see Artifact 14).

Resources. Having adequate resources to support digital accessibility practices and procedures are essential for long-term sustainability and maturity. Available resources at IHE2 include budgeting and funding, automated tools, real-time captioning service providers, assistive technology, and human labor for document and website remediation, post-production caption clean-up, software reviews, course content reviews, user support, and website testing. Rather than having each school or college acquire and manage its own resources in a siloed approach, resources are centrally managed within administrative units—mainly ITS and the Office of Disability.

The university's budget for digital accessibility directly affects administrative planning, goals, and practices. If resources are not centrally allocated, individual departments end up paying for them, which can be costly. For IHE2, the ITS department is responsible for most of the expenses. Tim from ITS says, "from a budget perspective, it has been challenging because … to transcribe ends up on our budget, and we have to pay for that." The institution was required to

respond to the OCR complaint initially and meet institutional goals and expectations with no additional resources. Tina noted, "For the institution itself - none of this came with more resources, but ITS ultimately did come with more resources."

Most of the human resources used for ensuring digital accessibility compliance consist of three people within the ITS department at IHE2. Recruiting qualified people in digital accessibility is challenging. Tim notes, “We can't fill …the position. It has been a nightmare to try filling in today's recruitment.” Since the university cannot fill the coordinator position, Tim explained, “We are taking a different approach, and we have them [teams] reporting to our IT lead.”

An important resource for software reviews is the Higher Education Community Vendor Assessment Tool (HECVAT) from EDUCAUSE (2021). The full HECVAT instrument has a section for IT accessibility that provides a comprehensive framework to determine a software product's compliance level. Adopting the HECVAT was part of the university’s risk management approach to advance digital accessibility compliance for third-party software purchases. Ensuring that software is accessible before deployment reduces the risk of a complaint and the cost of trying to fix it after roll-out. Tim notes, “We do request a HECVAT. Our internal audit team also reviews the software for all existing contracts and new contracts.” To help with support requests routed to ITS, automated forms and help ticket tracking systems are used. For example, an online software review form exists on the website to assist with routing to the AT team.

Resources for reviewing content in the learning management system are also helpful in meeting compliance for online courses. Tim from ITS notes, "Our instructional designers for our

LMS have been very helpful in this regard because if they see something on the LMS that's not necessarily accessible, they flag it and let our team know."

Qualified ITS support specialists trained in accessibility are an important resource for IHE2. The university's small team of accessibility technology specialists reviews hardware and software requests for the university and provides PDF remediation. Lisa from university libraries notes they are "responsible for ensuring that books, documents, videos, and other media are accessible and usable by students with print disabilities."

A suite of automated tools helps with checking the website for accessibility issues. Tim from the web development team notes, "We now have implemented tools into our content management system that automatically do accessibility checking. We have multiple accessibility tools that we run to go through and do checks."

Educational materials and training are also important resources for faculty and staff to gain knowledge of digital accessibility practices. Templates, checklists, and tutorials are provided to faculty and staff to facilitate proficiency. Jeff notes, "They actually showed someone using JAWS [screen reader software] and why they needed to use it, which was extremely interesting. I understand this now and why it is so important." Demonstrating to faculty and staff the end-user experience using screen reading software like JAWS or NVDA has helped with the adoption of practices.

Coordinated resource acquisition and allocation are vital for IHE2. Without shared resources, each department would be responsible for funding and finding its own approach to meet digital accessibility policies and practices. Coordination has enabled the university to pool its resources. However, the downside to coordinating services is that under resourced teams cannot keep up with campus-wide demands and finding qualified people is a huge challenge.

IHE3 Case Study

Background

IHE3 is a decentralized, medium-sized, public land-grant university with four locations in the Great Lakes region of the United States. The university offers 30 online undergraduate and graduate degrees in over 40 schools and departments. A board of trustees governs the university. The university has policies adopted in 2016 for electronic and information technology required by state and federal law to provide accessible technology to meet WCAG 2.1 and Section 508 as the official web standards (artifact 43). The university has a diversity, equity, and inclusion (DEI) plan overseen by a committee with a strong campus culture of equity and inclusion that is the main driver for digital accessibility advocacy. The IHE3 individual participants are unaware of any legal complaint or OCR investigation regarding equitable access to information technology violations under federal or state laws in the past ten years.

The university has an office of disability resources that processes academic accommodation requests and alternative formats and provides remediation of classroom materials. The Center for Teaching and Learning (CTL) focuses on creating awareness among faculty of the need for accessibility and providing them with professional development and tools to help them improve inclusive course design. The CTL has a team of instructional designers that develop or redesign courses to improve the inclusivity of courses. A dedicated team of web content managers is responsible for ensuring the websites are accessible.

Case IHE3 Context of Approaches to Digital Accessibility

IHE3 approaches digital accessibility as a shared responsibility across units for procuring accessible technology, ensuring accessible digital content, and applying universal design principles in courses (artifact 43**).** There is no centralized office, coordinator, or committee

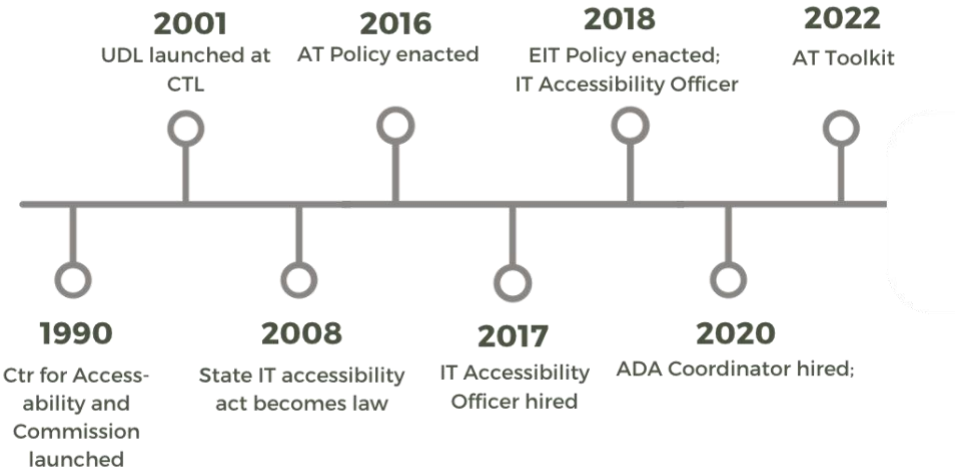
overseeing all digital accessibility efforts and no institutional plan. However, Rita noted, “when I joined in 2008, our center was already deliberately providing training around accessibility. I would suspect we have been intentional about promoting accessibility from the beginning.” The university acknowledges the proactive benefits of accessible technology to reduce the risk of a legal complaint, recruit and retain students with disabilities, and earn them a reputation for accessibility excellence. Rita notes that the Center for Teaching and Learning (CTL) is:

> Trying to be proactive about accessibility as opposed to reactive. We are… trying to provide faculty with enough information, knowledge, and tools ahead of time so that the materials are accessible because it helps proactively for all students.

Embracing digital accessibility practices and universal design is part of the university's culture of inclusivity, bolstered by the idea that it is *the right thing to do* to reduce barriers for students with disabilities. Figure 7 shows the timeline of digital accessibility implementation for IHE3.

Figure 7

IHE3 Timeline Toward Digital Accessibility Maturity



IHE3 Within Case Theme Analysis

Five themes emerged in the inductive data analysis phase for IHE3 and are discussed in the following section.

Implementation Approaches. IHE3 approaches the need for digital accessibility primarily from an equity-minded framework that encourages people to be conscious of the gaps and barriers for students rather than an approach that focuses on legal compliance (artifact 50). The university aims to develop guidelines and procedures to improve course accessibility and reduce the need for special accommodations by means of advocacy using a decentralized, shared unit responsibility approach with some coordinated efforts. The university's commitment to digital accessibility aligns with the university's culture for the inclusion of all persons in its programs and services.

Directors within administrative units have approached accessibility using department-level planning, cross-unit collaboration, and finding creative ways to take the lead using the finite resources and authority to which they have access. Rita notes:

> I was part of a self-appointed committee…trying to find the best approach institutionally to support captioning. In our analysis, we determined that what we needed was a staff person who was devoted to captioning materials. And so, we worked on a proposal to senior leadership to create that staff position and fund it.

Discretion is left up to schools and departments in determining how best to meet digital accessibility policies. Rita from the CTL notes, "I think a coordinated approach would create more awareness of types of [digital accessibility] processes…we have a lot of individual processes." In addition, the university does not currently track and report to senior leadership on

institutional-wide digital accessibility effectiveness, benchmarks, or planning. Eva from the web communications team noted, “We have never presented to the President.”

The university has formed one committee charged with fostering equity and inclusive excellence for persons with disabilities (artifact 50). Lea notes that the committee "looks into issues of accessibility and advises and makes recommendations to the President for campus-wide initiatives." Students are involved in the committees as a stakeholder group, which is important for IHE3. Deb from instructional design notes, “We are bringing them [students] into our accessibility world and our culture at the department” as part of the institutional inclusion efforts.

Expectations and Goals. In 2017, IHE3 conducted a process improvement exercise and set the expectation that all new content going on the website had to be accessible, including PDFs. The web team requires that everything must be accessible. Eva from the web team noted, "The President’s office approved our first web standards document in 2017.”

Expectations stated in policy are that faculty must create accessible materials for their online courses; however, not all online courses are checked for accessibility by the instructional design team. Diana notes, “I stress that people with disabilities must be able to use EIT independently and in the same time frame because that speaks to course materials.” The CTL is responsible for inclusive course design training, and the instructional designers ensure accessible content in online courses. Rita notes:

> We [CTL]…provide faculty with enough information… ahead of time so that the materials are accessible, because it helps proactively to reduce the number of times that the DRC has to intervene to remediate a file or a video that is not accessible.

The expectation for instructional designers is to use the Quality Matters (QM) rubric in the final phase of development for the courses, which includes standard criteria for accessibility.

Faculty are given the opportunity to review their courses for accessibility on a voluntary basis with instructional designers. Deb notes, "we allow faculty to self-assess and then request a course review from our instructional design team." The expectation is that not all online courses are required to go through a review process for digital accessibility, and faculty are responsible for making their own courses accessible. Rita notes, “Accessibility can be a tough sell to faculty.” Despite the incentivized professional development that the CTL offers, there is still a noticeable lack of meeting policy expectations in online courses. Lea from libraries notes,

> I have learned that there is still much education to be done with the faculty…the biggest thing is how far we still have to go with reaching out to faculty, changing faculty minds, and educating faculty about accessibility.

The CTL at IHE3 continues to look at innovative and creative ways to encourage faculty to take an interest in raising their course Ally scores for accessibility. Rita acknowledges that “we continue to refine our approach on how to encourage faculty to engage with accessibility when it is easy to ignore it.”

IHE3 has a strategic plan and DEI initiative with goals and action items to reduce student access barriers (artifact 31). Diana notes that the strategic plan includes an action item to get “increased accessibility and equity for people with disabilities and to get accessibility training for faculty.” In lieu of a specific plan for setting and reaching digital accessibility goals, each department has a loosely communicated plan they discuss internally. Deb from instructional design noted, "We don't really have an accessibility plan. We align our goals with institutional goals." Without a baseline understanding of current compliance across the organization mapped to clear goals, it is hard to understand what a mature digital accessibility plan looks like for IHE3. In addition, there is no measuring or reporting to senior leadership on how well digital

accessibility efforts at the local unit impact digital accessibility goals at the institutional level. There is some incongruence among individual participants on how well the university thinks it is doing versus how well it is actually doing in meeting digital accessibility compliance across the institution. Diana notes, “We are at the beginning. We are very immature.” The maturity of digital accessibility is measured in the intentional application of practices across all digital spaces and the consistent implementation of policies at all levels of the organization, both academic and administrative. Deb emphasizes digital accessibility maturity, "as a public institution, it is not a maybe for us – it is a must."

Communication and Buy-In. The university has extensive and detailed information for meeting digital accessibility communicated on its website; however, not everyone knows the resources exist or where to find them. Rita notes, “the goal for coordinated communication is to try to move that knowledge that's held by a few further out.” Training and outreach are components necessary to increase awareness and build the skill sets necessary to produce accessible digital course content (Nash et al., 2023, Chapter 10, p. 212). Communicating digital accessibility practices and policies at IHE3 are carried out through training and professional development opportunities, one-on-one consultations, and group meetings shared across several administrative units. Eva notes, “The [web] communications policy is where it solidifies that people must use the standards and things have to be accessible. We also make presentations to the people on the committee.”

The CTL team continues increasing awareness and engaging faculty through professional development workshops, training academies, and incentivizing with a digital badging system. Rita notes increased buy-in through developing “an incentive program through digital badging to recognize those who have made significant efforts to improve; there are levels of badges for the

overall course accessibility scores." Automated course score feedback communicated in real-time through Blackboard Ally is helping with faculty buy-in. Rita noted, "I think the biggest change that I saw with buy-in for faculty was implementing Ally into Blackboard because it made it much more visible to faculty."

Administrative units acknowledged improvement in communication methods are needed and are committed to seeking opportunities to improve services. The university sees campus units as partners to build awareness and competence about digital accessibility. Rita noted, "The university is looking to create a more coordinated approach to communication and to do some training to promote digital accessibility outside the academic realm." Better communication strategies across campus are an ongoing goal to improve buy-in and awareness at IHE3 through an established commission with stakeholders campus-wide. Lea notes, "…on the commission; we were not seeing as much buy-in with going the advocacy route. So, we are starting to …explore more forceful ways of trying to advocate for things." Through institutional partnerships, IHE3 aims to create a digital accessibility educational campaign that will reach everyone on campus for every type of digital production.

Compliance, Policy, and Standards. The oversight structure for digital accessibility is managed differently from the implementation of the electronic and information technology (EIT) accessibility policy. The university's president made the decision for digital accessibility compliance to reside within the compliance office starting in late 2017. The compliance office has a dedicated EIT coordinator that primarily oversees the EIT policy and conducts software compliance reviews to Section 508. Administrative units are responsible for supporting digital accessibility compliance efforts in their respective areas of expertise – website development, inclusive course design, document remediation, and creating alternative formats, including captioning.

The EIT policy adopted in 2016 provides the impetus for legal compliance for equal access to digital content and procuring accessible software. The EIT policy applies to all software purchases made by academic and administrative units, programs, services, and activities. However, exceptions are allowed for software that does not meet the standards approved by the compliance office. Staying on top of software reviews has been particularly challenging for the accessibility compliance coordinator. There have been limitations to fully implementing the procurement policy for all software procured and renewed each year. Diana from the compliance office notes, "I was supposed to be included in the RFPs; …I have not been in all of them. I want to be ahead of the curve instead of reacting [after the purchase is made]." This means that IHE3 is out of compliance with its stated procurement policy. The incongruence between policy and practice leads to the question of whether the university should set the bar lower so that it is more achievable or add accountability and more resources to ensure that the policy and procedures are met.

With competing priorities that faculty and staff have to juggle, complying with digital accessibility standards has been an additional workload challenge. Eva from the web team notes, “We are a [small] team for having 11,000 web pages.” Diana notes, “The disability resource office is …understaffed. They do not have enough people to remediate materials.”

Expectations regarding policy and procedural adherence are clear, and it is mainly at the discretion of unit leaders to prioritize meeting the EIT policy. The compliance office has no authority to hold units or individuals accountable for not following the digital accessibility policy and procedures. For example, the university provides steps on the website for students with hearing impairments to request captions from a professor. However, suppose a professor denies a student's request. In that case, the student has no further recourse but to ask the professor to notify the student if their position changes in the future (artifact 51). The institution's reactive rather than proactive response regarding a student's captioning needs is incongruent with the university’s policy and culture of equity and inclusion. The bigger question is, what are the consequences for faculty and staff not following the EIT policy at the institution?

The CTL at IHE3 has developed a plan for teaching digital accessibility standards to faculty and advocates using Blackboard Ally, Quality Matters QA rubric, and universal design to meet accessibility standards. A robust and effective quality assurance process and training can lead to greater compliance and buy-in. Rita notes, “We do not enforce the QM Rubric very strongly, but that is the standard that we train against. A quality review is more incentive than the requirement.” When discussing the connection between the EIT policy and course accessibility, the CTL director notes, “The accessibility policy is likely tied to and is part of a general policy, a broader policy related to curriculum and course management.” Having accountability for faculty regarding the accessibility of courses may lead to greater compliance. The CTL provides a

faculty toolkit on its website and advocates using Blackboard Ally to see Web Content Accessibility Guidelines (WCAG) scores in online courses (artifact 38). Rita notes, "faculty…seeing the red gauges had a very strong impact on faculty buy-in."

The compliance office provides a *do-it-yourself* technology toolkit encouraging faculty and staff will teach themselves how to make accessible content for online documents and web pages. However, Rita notes that even with the toolkit and Ally, "some faculty still have not bought in, so it worked with some, but not all."

The university adopted a web communications policy in 2019 requiring adherence to WCAG and ADA laws. The university started out remediating content going forward; legacy content was not the focus of the efforts. Eva noted that it was "basically, a kind of a going-forward thing when they got started. So, whatever was out there was out there." Web team staff do not know who sets benchmarks and reports on website accessibility. Not reporting the website accessibility issues can lead to higher risk for the university. Eva from the web team noted, "I do not do any specific reporting."

IHE3 participants recognize that greater congruence between policy and practice will lead students with disabilities toward better access to digital materials in alternative formats, leading to greater opportunities for academic success, reduced stress, and student retention.

Resources. Human resources within departments are shared across units, including those charged with training, caption clean-up, document remediation, sourcing accessible materials and software, implementing accessible solutions, and inclusive course design. Unit leaders have identified in-house experts passionate about digital accessibility efforts and given them roles and responsibilities related to advancing digital accessibility within their department. Deb notes, "We have had different people that, through their passion, have been our sort of the *go-to accessibility*

person.” Outside experts are not hired for accessibility work. Student workers are hired to perform less complex work, such as caption clean-up, PDF remediation, scanning, and OCRing materials. Eva notes, “We need the human resources to be able to go through and make all those [website] fixes.” Education professionals often fight for the budget to hire specialized individuals in digital accessibility (Rowland, 2023, p. 43).

There is no centralized funding or budget for digital accessibility at IHE3 and funds are limited. The university came out of the COVID-19 pandemic with a scarcity mindset. Diana noted, “Accessibility is not extra, but it is considered extra. And if it costs money, it will be a very hard sell.” Individual units pay for accessibility tools and resources**.** Lea notes, "I have… prepared reports for our administration to try and get more money for different efforts." A few funds are set aside for internal professional development to stay trained on new technologies and standards. Third-party service providers for digital accessibility remediation efforts are not contracted except for captioning services provided through the disability resources office. Most of the work is done in-house. Academic departments pay for their post-production captioning clean-up needs beyond what is required to meet academic accommodation, which may lead to accurate captioning being a low priority.

In addition to using checklists, design templates, the QM rubric, and other manual tools, the university has invested in automated tools to help the web team and faculty improve practices. Diana touts Blackboard Ally and notes, “Staff can run a document through it to make sure it is accessible before it goes out, and they can use it if they would rather listen to a document.” The video streaming platform Kaltura has built-in automated captioning, which is a first step toward providing an alternate format for students with hearing loss. The university uses a website automated scanning tool that looks at accessibility and quality assurance that helps the

web team understand compliance levels in real-time. Staff have access to Adobe Acrobat's automated accessibility checker for checking and fixing inaccessible PDFs; however, the work is complex and intimidating for most people not trained in PDF remediation. Rita noted, "PDFs were probably the biggest problem …and trying to remediate became really time-consuming." JAWS screen reader users are located in some departments for human usability testing of digital materials, which is seen as a valuable resource to troubleshoot why some things are not working with assistive technology.

Using automated assessment and evaluation tools is a fast and efficient approach to understanding the level of accessibility of online content. IHE3 has a high dependency on automated tools to meet digital accessibility compliance.

Research Sub-questions

In addition to the main research question, this study has three sub-questions of interest. I analyzed the emerging data looking for similarities, differences, and relationships across common practices, policies, goals, and digital accessibility plan maturity. For the purposes of this study, Sinclair's (2019) scale for a genericized maturity model for digital accessibility was applied (p. 7). I then analyzed the emerging data from the approaches in relation to institutional efforts. Of special interest in this study is comparing a decentralized, *siloed* approach to digital accessibility compared to a *centralized,* coordinated approach.

Sub-question 1*: How do current digital accessibility implementation practices across the organization support reaching goals and plan maturity?*

In all three IHE cases reviewed, the widespread adoption of practices influenced digital accessibility maturity. This question sought to look at how grassroots efforts influenced institutional-wide maturity and strategic goals within the organizational hierarchy. Each case had

established practices going back more than five years, including training. Implementation of practices were differentiated by how they were funded and administered. Digital accessibility practices were largely standardized and coordinated. Eleven common practices were present in all three cases: (a) Web Content Accessibility Guidelines (WCAG) as the adopted standard; (b) Universal Design (UD) promoted in online courses; (c) Blackboard Ally learning management system integration; (d) website accessibility automated scanning tool; (e) human usability testing; (f) document remediation team; (g) centralized software reviews; (h) a captioning team; (i) streaming video platforms that provide both automatic and post-production captions; (j) regular training opportunities for staff and faculty; and (k) a caption real-time service provider. The use of automated tools by all three IHEs as a common practice led to greater adoption by faculty because it added real-time checking of content, immediate feedback, and faster access to *do-it-yourself* (DIY) solutions than a manual process. Two-thirds of the IHE cases packaged and marketed accessibility related technology tools as a *technology toolkit* for staff and faculty.

Centralized software review practices led to greater organizational maturity. Two-thirds of participants relied on the HECVAT as a standardized procedure for reviewing software before making software purchases. Two-thirds of the study participants use an equally effective alternative access plan (EEAAP) process to allow software developers time to bring software interfaces into compliance if they are not passing minimum requirements.

Training staff and faculty was the number one practice across all IHEs for reaching goals and digital accessibility maturity. All IHEs in the study used incentives to encourage training, such as digital badges, paid stipends, and certificates. Holding faculty and staff accountable for applying common and standardized practices significantly impacted the adoption of digital accessibility practices in daily workflows that led to plan maturity.

Sub-question 2: How does the maturity of an organization's digital accessibility plan relate to the adoption of practices across departments?

Sub question 2 looked at how plan maturity influenced the adoption of practices throughout the institution's hierarchy. This is a macro-level view of an approach with an action plan in place that is communicated from the top of the hierarchy, such as from an executive-level sponsor or IHE president's office. Only one of the three IHE cases reviewed had public and transparent sponsorship from the President's office, including two appointments for digital accessibility: (a) a dedicated commission and (b) a dedicated accessibility compliance officer.

All of the IHE cases have an implementation plan for digital accessibility. Still, none of the IHEs had a written adopted plan to track performance, set benchmarks, conduct regular EIT audits, or measure the impact of practices across the institution. All three IHEs have strategic plans connected to action items and goals that influence digital accessibility efforts either directly or indirectly across the institution.

Sub-question 3: ***How does having a coordinated approach relate to the organization's digital accessibility efforts?***

Sub question 3 looked at the application of a coordinated and centralized approach within the organizational hierarchy for each IHE case. All IHE cases applied a shared and coordinated approach for streamlining services, experts, and tools that included: a) uniform training; (b) standardized practices; (c) reduced costs through centralized administration; and (c) a reduced burden on administrative units to individually source tools and experts themself.

Designating digital accessibility coordinators or compliance officers was the most common management method for providing oversight of digital accessibility policies that reported on campus-wide compliance issues, concerns, and progress.

Chapter 5

Deductive Analysis, Implications, Recommendations, and Conclusions

Chapter 5 discusses the findings from the deductive analysis phase of the research study. A convergence activity was conducted on the three IHE cases. Then criteria from the Jackson 4P Framework (J4P) (2020) were applied to the data looking for similarities and differences across the four frames of policies, people, practices, and planning. The first section of this chapter discusses the overall findings, followed by sections discussing implications, recommendations, conclusions, and future research.

This qualitative case study aimed to explore different approaches to implementing digital accessibility at three public, medium-sized institutions in higher education. Also, of interest is to evaluate a centralized, coordinated approach in the planning and implementing digital accessibility efforts at a medium-sized institution. Based on the problem statement, the research question posed in this study was: What are the organizational approaches to digital accessibility in higher education?

The significance of the research was that approaches to digital accessibility for medium-sized universities are not well understood. This study supported similar findings by Sinclair (2019) that showed that organizations need guidance and resources related to digital accessibility strategies for authoring accessible materials, better design practices to create inclusive materials, and well-established model(s) to establish and run an organizational-wide accessibility program. IHEs are still operating in a *reactive* rather than *proactive* approach. The rise in students taking online courses and the number of students with disabilities in higher education has been an impetus for prioritizing digital accessibility. Office of Civil Rights (OCR) investigations and legal complaints related to digital accessibility continue steadily.

The boundaries of this case study were as follows: (a) the type of institution (public); (b) location (northern tier of the US); (c) size of the institution (10,000 to 15,000 students), (d) having an active digital accessibility policy; and (e) a member of EDUCAUSE. Large institutions have been the focus of numerous studies on accessibility. Smaller public institutions are examined less frequently (Wynants & Dennis, 2017; Lohman, 2023); therefore, size was a factor in the selection process.

I followed ethical principles and processes in this study recommended by Yin (2018). Permission to conduct the study was requested from the Institutional Review Board at each university before data collection (see Appendix A). The informed consent statement included information on the nature and purpose of the study as well as the right and responsibilities of the participants (see Appendix C). Privacy was maintained throughout the study, and no information on the participant's identity was publicly revealed. The study did not involve deception, and honest communication was maintained among the participant, the researcher, and the university employees.

The findings and implications of the deductive analysis in this study are discussed in the next section this chapter.

Evaluation of Findings

Jackson's (2020) concept of the *4P* frames and Kezar and Posselt's (2020) *equity and social justice model* for organizations provided the frameworks for analyzing the data. Data was collected in Spring 2023 through semi-structured, open-ended interviews with 14 administrators from three public universities situated in different organizational units actively involved in digital accessibility efforts. Interviews were preceded by collecting and analyzing archived and public data representing the university’s activities and events in Fall 2022. I kept a researcher

journal throughout the study to record my perceptions, thoughts, and reflection on the results of the research and discovery of key ideas. The five themes that emerged in the inductive analysis was analyzed and compared to the J4P framework looking for common criteria across the data set. Analysis of the data from each site, including interviews and archival data, resulted in five themes, 14 categories, and 20 subcategories within the four J4P frames of people, policy, practices, and planning. A full IHE site data analysis comparison of themes and categories is depicted in Table 5 below.

Table 5

IHE Site Data Analysis – Themes and Categories

Themes	Categories	Subcategories	J4P Frames
Implementation approaches	Centralized Decentralized	Coordinated Shared responsibility Risk-based Equity-minded UDL Leading from the middle	Plan People
Goals and Expectations	Planning Initiatives	Strategic planning Benchmarks Reporting	Plan Practices
Communication	Awareness Training Buy-in	Department level Campus-wide Champion	Practices People
Compliance	Policies Standards & laws Accountability	EIT, procurement, courses WCAG, Section 504 & 508 Leadership	Policy Practices
Resources	Tools Support Funding Staffing	Automated CTL, DSO, Library, ITS Budget and cost Dedicated or shared	Practices People

People Frame

The IHEs had knowledgeable staff that provided regular training and support for faculty and staff on digital accessibility expectations and practices. Institutions hired people who already have the desired expertise or willing to learn. Digital accessibility technical support came from several different units on campus including outsourcing to experts. Support roles were shared across units. Information and Technology Services (ITS) staff was primarily responsible for software reviews. Centers for Teaching and Learning (CTL) staff provided faculty training and support for online courses and teaching materials. The Office of Disability Services (ODS) staff processed accommodations and requests for assistive technology and captioning. The web team staff provided support for website accessibility. Similar to the research by Linder et al. (2015), participants discussed a need to better articulate who is responsible for ensuring online accessibility compliance (p. 24). For all three IHEs, the CTL or the ODS led in communicating and training faculty. Research conducted by Linder et al. (2015) supported this finding that the CTL or ODS worked one-on-one with faculty to address the needs around accessibility (p. 25). Table 6 shows the unit affiliation in relation to the number of interviews that were conducted.

Table 6

Professional Affiliation of Study Individual Participants

Affiliation	Interviews
Information Technology Services	4
Center for Teaching and Learning	4
Website Team	2
Office of Disability Services	1
Libraries	2
Compliance	1

Every IHE case had a digital accessibility committee or similar functioning unit with people representing key stakeholder membership for input and feedback on practices.

The main challenges for IHE participants were access to sufficient skilled labor, time, and support. Corroborating research (Linder et al., 2015) posits that besides a lack of people, "lack of time prevents many professionals… from providing resources…because they do not have the personnel to commit to digital accessibility efforts" (p. 28). A time scarcity has resulted in a *reactive* versus *proactive* response to digital accessibility similar to the research by Guilbaud et al. (2021) that found that "faculty use a reactive approach instead of a proactive approach" and "administrators need to provide support" in terms of time (p. 21). All IHE participants outsourced some of their workloads to third-party vendors primarily for captioning or document remediation. Resistance to adoption was largely due to lack of time in current workflows.

A coordinator essentially led as the most active digital accessibility *champion* on campus from within the organization. Research by Deaton (2018) revealed IHEs are designating coordinators for oversight of accessibility. Two IHE participants had designated full-time digital accessibility experts responsible for practices oversight or implementation of the policy for the entire institution. Two participants had coordinators who were members of the International Association of Accessibility Professionals (IAAP) and Certified Professionals in Accessibility Core Competencies (CPACC). IHE1 shared that it had a dedicated office overseen by the digital accessibility coordinator within the CTL. IHE2 had three dedicated accessibility professionals within ITS reporting to the CIO.

IHE1 is implementing a centralized, coordinated, *leading-from-the-middle* approach with a full-time, dedicated digital accessibility coordinator. IHE2 is applying a coordinated, shared resource approach without an EIT coordinator due to retirement. Due to the tight labor market, finding an experienced digital accessibility coordinator replacement proved very difficult for

IHE2 to find and could not find a replacement. IHE3 has an IT accessibility officer overseeing digital accessibility compliance and policies with limited authority to act on any issues.

Policy Frame

EIT accessibility policies are created to guide the organization and give direction by outlining standards (Brooks, et al., 2023, p. 161) and legal compliance expectations (Mancilla & Frey, 2020, p. 5). Digital accessibility policies commonly state the legal expectations for compliance. All participants have an existing digital accessibility or electronic and information technology (EIT) policy and acknowledge that having a policy in place leads to compliance with federal and state legislation, which is corroborated in the literature (Epshteyn, 2019, p. 8; Mancilla & Frey, 2020, p. 5). Two participants noted that information technology service is the primary contact for digital accessibility policy questions and concerns, corresponding to trends noted in the existing literature (Bedford-Jack, 2018, p. 141). The IHEs include an accessibility statement in online course syllabi to provide direction for students needing help. Polices are commonly stated on the public website. The ITS or compliance office is primarily responsible for oversight of the EIT policy. Table 7 shows the comparison of the policy language elements for each IHE.

Table 7

Comparison of Digital Accessibility Policy Elements Across Participants

Language inclusions	IHE1	IHE2	IHE3
EIT policy	x	x	x
Procurement	x	x	x
Standards			x
Laws	x	x	x
Responsibility		x	x
Goal	x		x
Requirement			x

Two-thirds of participants have had a digital accessibility policy in place longer than 8 years. Creating a digital accessibility policy was one of the first significant steps toward meeting digital

accessibility for participants. They noted that meeting the digital accessibility policy is connected to having standardized practices that support meeting the policy, as shown with other IHE cases in existing literature (Bedford & Jack, 2023, p. 142; Wiley et al., 2023, p. 129). All policies had procedures in place to support implementation. The participants also stressed the importance of an equitable and inclusive process of creating digital accessibility policies that include stakeholder feedback and oversight. A policy and procedure that includes both universal design and the Web Content Accessibility Guidelines (WCAG) is acknowledged by all participants as the best approach toward compliance in online courses as supported by existing literature (Burgstahler, 2023, p. 196; Jackson, 2020, p. 1)

The participants also expressed concern about consistently and uniformly meeting university policies for digital accessibility due to lack of awareness (Olson, 2013, p. 4), accountability (Bedford-Jack, 2023, p. 154; Sieben-Schneider & Hamilton-Brodie, 2016, p. 223) and shortage of human resources (Clark, 2020, p. 277) similar to patterns seen in existing literature. The institutions noted that their policies posted on their public websites point to clear and visible guidelines that are linked to workflows and the tools available to implement them.

Balancing policy expectations with practical realities is one of the most significant challenges with implementing a digital accessibility policy, according to participants. Some, but not all, of the administrators, expressed that they had no authority to enforce change. As a result, there were concerns regarding how to hold people accountable for meeting digital accessibility guidelines. While expectations are clear, adherence has made progress largely dependent upon the discretion of unit leaders, corroborated by literature (Bedford-Jack, 2023, p. 154).

In this study, a strong relationship is noted between IHE participants having a policy and those with a digital accessibility coordinator, supporting the assertion in the literature that there

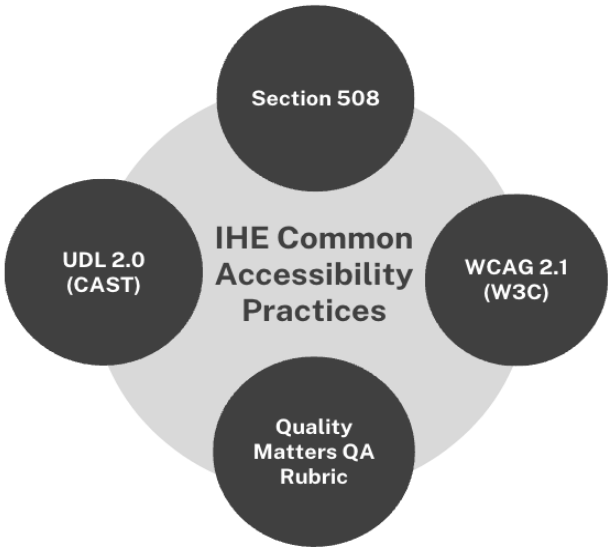
is a correlation between institutions with a policy and a digital accessibility coordinator (Deaton, 2018, p. 25). In addition, all participants expressed the importance and benefits of having a central responsible entity overseeing digital accessibility policies and procedures.

Practices Frame

A strong relationship exists between having a policy and having standardized procedures and practices among all participants, which corroborated with existing literature (Bedford-Jack, 2023, p. 139; Mancilla & Frey, 2020, p. 8). The findings from the study show a desire to reduce the number of accommodation requests, promote universal design best practices, and increase knowledge of best practices. Faculty predominantly use compliance self-monitoring and depend heavily on application-based automated scanning and scoring tools such as Ally. Training is the primary method of increasing knowledge of practices across the institution. Participants noted that it would be difficult to achieve and maintain digital accessibility without the adoption of uniform standards and procedures. Participants with the oldest policies in place also had the longest-running standardized practices. Participants noted that it was important to support practices with the concept of developing a *culture of accessibility*. Figure 8 depicts the common standardized practices applied by all the participants in this study: (a) Section 508, (b) UDL, (c) WCAG, and (d) Quality Matters rubric or similar instrument.

Figure 8

IHE Standardized Practices



Reducing accommodations. In addition, advocating and communicating Universal Design for Learning (UDL) principles as a best practice for course design were applied at all participating institutions and helped with faculty awareness. Equally important was the goal to reduce the number of student accommodation requests by applying a proactive approach such as UDL to make content accessible as it is created and not after the fact. Burgstahler (2023) supports this finding stating, "Many accommodations would be unnecessary or reduced if instructors routinely applied accessible and inclusive design practices when creating or updating their courses" (p. 192).

Monitoring. All participants responded that the individual faculty members teaching online courses are responsible for ensuring their course meets ADA compliance. Individual units predominantly use a compliance self-monitoring plan to ensure compliance supported by checklists, templates, tutorials, and automated testing tools, as seen with other case studies (Bedford-Jack, 2023, p. 154).

All three institutions depend primarily on data analytics generated from automatic content scanning tools using artificial intelligence. To help with self-monitoring, the IHEs invested in application-based automated scanning and scoring tools. Blackboard Ally with AI-generated recommended fixes is the primary way around the gap between non-accessible course content and positive change in faculty practices toward making accessible content. Caprette (2023) promotes the use of technology tools and posits that "by implementing this suite of accessibility tools, course developers can take a proactive approach to accessibility and inclusive education" (p. 290). Similarly, the web teams use tools like Siteimprove or DubBot to automatically crawl and check websites to the WCAG criteria. As the literature points out, automated web crawlers do not catch all website accessibility issues but offer a first-step approach to accessibility (Bedford-Jack, 2023, p. 150), and guide the support team to issues that need to be fixed manually. As an additional level of assurance, human usability testing is performed on webpages using common screen reading software. IHEs measuring the impact of practices on maturity better understood their level of compliance because of regular monitoring, evaluating, and reporting across all units of the organization.

Procurement. Two-thirds of participants relied on the HECVAT (EDUCAUSE, 2021) as a standardized procedure for reviewing software before making software purchases, which played a major role in reaching compliance goals. To help meet *Section 508 of the Rehabilitation Act of 1973 (Amended 1998)* procurement practices, most participants find the HECVAT instrument invaluable as a framework for evaluating software applications for security and accessibility compliance. All participants have a dedicated team of people within ITS or have ITS experience who are completing accessibility software compliance reviews to meet federal procurement requirements.

Tools. All three IHE participants invested in and promoted the use of a *technology toolbox* or suite of software tools for implementing recommended practices. Shared-use automated tools are vital to digital accessibility efforts for all participants. Technology tools like automated WCAG checking software and streaming video platforms that generate automated captions are managed and paid for centrally. Participants share common tools across the university rather than taking a siloed approach whereby each unit acquires and pays for its own tools. Applying cross-functional tools and skillsets with other units across the institution helps develop shared ways to manage the complexities of digital accessibility.

Communication. Digital accessibility training and professional development is the primary approach to increasing knowledge of practices and awareness of policies. Digital accessibility training is strongly encouraged by IHE participants but is not required for all faculty and staff. Some training is incentivized. Two institutions use digital certificates and badges or offer paid stipends for intensive boot camp-type training for faculty. The Center for Teaching and Learning or equivalent unit is primarily responsible for faculty and staff training and instructional design assistance. ITS, libraries, and the web team are responsible for conducting their own internal training, which supports the unique nuances of individual disciplines and technologies.

Resources. Participants use a combined approach of in-house and outsourced services to help with meeting digital accessibility needs for closed captions. A dedicated pool of students or staff help with captioning and remediation. All participants recognize situations when accessibility tasks are too complex or time-sensitive for beginners or student workers. Therefore, designated remediation teams do the work, or tasks are outsourced to third-party vendors for captioning and document remediation. All participants use artificial intelligence (AI) generated

and third-party communication access real-time translation (CART) services for live-streaming events. Research by Guilbaud et al. (2021) reveals a similar finding that faculty reported that "captioning videos themselves was a very time-intensive process and that it would be beneficial for a specific department within the university to provide those services or even outsource that task to an external vendor" (p. 20).

Notably, *Universal Design for Learning* framework and the *Quality Matters* quality assurance rubric are the most commonly used tools for advancing student-centered inclusive course design for academic units. In addition, applying the *Web Content Accessibility Guidelines* (WCAG) and legal requirements in *Section 508 of the Rehabilitation Act of 1973 (Amended 1998)* are the standards most used to meet legal compliance.

Mindful Administrative Practice. The participants generally felt it is important to implement the concept of a "culture of accessibility" within the university. The awareness of digital accessibility must be shared by everyone, especially the people who have responsibilities for developing online content, reviewing software, and managing digital services supported in the literature. Archambault et al. (2016) posit that it is important to implement the idea of a "culture of accessibility," and awareness about accessibility "must be shared by everyone" (p. 65-66).

Student Centeredness. Two participants have a diversity, equity, and inclusion (DEI) plan that encourages the inclusion of students with disabilities in university services and programs; however, the extent of the effectiveness of the DEI initiative is unknown to participants. All IHE participants share a commitment to practices that meet the Web Content Accessibility Guidelines to improve equity and inclusion at the university by implementing an approach that levels the playing field for students with disabilities. Supporting literature by

McCann & Peacock (2021) state that "WCAG guidelines provide a baseline of technical configuration to support users with disabilities" and that it ensures that users, "no matter the individual ability, have the opportunity to access digital… information necessary for their education" (p. 274).

Plan Frame

A digital accessibility implementation plan provides the roadmap for institutional implementation, practices, goals, and expectations. Two participants do not have a written institutional EIT plan; however, individual units have goals tied to the institutional strategic goals. In addition, two of the three IHE participants had a digital *technology toolkit* mapped to WCAG 2.1 compliance shared across all units, laying out standardized practices and tools.

Participants' accessibility initiatives were primarily led from positions within the organization's middle hierarchy supporting the notion that accessibility initiatives can be successfully *led from the middle* (Kelley et al., 2016).

None of the participants had a comprehensive written plan yet for digital accessibility. The goal of all three participating IHEs is to create a comprehensive digital accessibility plan that will increase the maturity of digital accessibility guidelines, provide a budget, improves content design, and provides a common set of standards, benchmarks, frameworks, and performance monitoring for campus-wide reporting. IHE1 believes that a good plan will lead to greater maturity in support of risk management and equity and inclusion initiatives. IHE3 is implementing a coordinated, shared resource approach from a top-down/bottom-up method that primarily emphasizes advocacy and is forming a committee to look at institutional priorities for digital accessibility.

Participants expressed interest in centralizing and coordinating all or part of their digital accessibility efforts, as supported by existing literature (Bedford-Jack, 2023, p. 141; Burke et al., 2016, p. 179; Sieben-Schneider & Hamilton-Brodie, 2016, p. 224). Only one of the three institutions regularly reports to senior leadership regarding the organization's compliance status. Dashboard tools are the primary means of transparent reporting. For one participant, centralized tracking forms the baseline for setting goals, future needs, and understanding the program's effectiveness.

Summary of Findings

The responses provide valuable insight and interpretation of approaches to digital accessibility at medium-sized public universities.

There is no one-size-fits-all institutional approach to digital accessibility

Administrative and organizational structures are slightly different and institutional priorities influence the approach to digital accessibility programs. Factors that affect implementation and planning for digital accessibility programs include institutional culture, initiatives, budget model, funding, staffing, and resource availability.

IHEs were Motivated by Risk Management and Compliance

Participants discussed the importance of paying attention to digital accessibility from a legal standpoint because of the risks of receiving a complaint (Bedford-Jack, 2023; Lazar et al., 2015). Table 8 shows the factors influencing approaches to digital accessibility for the IHE participants.

Table 8

Factors Influencing the Approach to Digital Accessibility

Influencing factors	IHE1	IHE2	IHE3
OCR investigation	x	x	
Legal complaint		x	
Risk management	x	x	x
Diversity, equity, and inclusion		x	x

Centralized and Coordinated Approaches Led to More Organized Efforts

Centralized efforts for digital accessibility led to organized efforts, whereas a decentralized, ad hoc approach led to disorganization (Medrano & Fundell, 2023). Having a designated coordinator or officer assisting or overseeing digital accessibility efforts was commonly found. Coordinators were mostly found to have a limited scope of authority and largely functioned in a technical role or in advocacy. Digital accessibility efforts are not limited to oversight by just one office, but rather distributed and shared. Several different administrative offices participated in digital accessibility efforts based on their expertise. Most coordinators had a background previously in ITS, disability resources, or educational technology support.

Initiatives Were Largely Led from Middle Hierarchy

Accessibility initiatives and programs were led primarily by administrators from the mid-level hierarchy of the organization. Program managers, unit directors, and coordinators were acting as the sponsors and program *champions* for digital accessibility efforts on behalf of students and staff most affected by access barriers across the institution.

Resource Availability Affected Effectiveness of Implementation Efforts

Digital accessibility programs required resources, often beyond what current funding and staffing plans allowed. Participants expressed a need for more resources, again similar to the supported literature that shows implementation challenges due to a lack of resources, especially human resources (Bedford-Jack, 2023, p. 153). Lack of adequate resources led to staff primarily

reacting to student issues and needs as they occurred rather than proactively providing what the students needed. The majority of participants have a goal to reduce the risk of complaints by moving to a more *proactive* approach, as supported in research by Sieben-Schneider & Hamilton-Brodie (2016).

Communication and Training Affected Adoption

This study underscores that accessibility training and communication is a core component of any higher education digital accessibility initiative. Communication, training, and coordination of support activities need to be more consistent across the organization. Participants shared that communication and training is an effective means of consistently implementing digital accessibility practices across the institution, however participants were not always sure who is responsible for ensuring practices are met. EIT policies and expectations are not communicated to all staff on a regular basis, and it is not known if every employee is receiving uniform training on digital accessibility. Organizational-wide training and communication primarily comes through three units – the Center for Teaching and Learning, Office of Disability Services, or the Office of Ethics and Compliance. Many of the participants' comments resonated with points made in the literature, including the importance of a flexible training approach that meets the unique, nuanced needs of different organizational units and technology (Sutton, 2017, p. 9). There were concerns about balancing expectations versus practices in reality, which corresponded with literature by Bedford-Jack (2023) that "one of the most significant challenges in the implementation of the policy has been balancing policy ideals with practical realities" (p. 153). A noticeable need was expressed to communicate best practices to faculty for transforming course materials into an accessible design, which corroborates existing research (Guilbaud, 2021,

p. 13; Langley-Turnbaugh et al., 2013; Tobin & Behling, 2018, p. 245; Wynants & Dennis, p. 34, 2017).

Technology Toolkits Support Practices and Policies

The institutions relied on automated and manual technologies to help with meeting digital accessibility compliance. Most of the participating institutions promoted the use of *do-it-yourself*, self-monitoring tools to staff and faculty through a *technology toolkit* supported by instructional tutorials. The institutions relied heavily on automated software checking and fixing tools to meet compliance using artificial intelligence for identifying WCAG issues and generating speech-to-text translation.

Policies Guided Practices

All institutions in the study had a policy that included legal expectations, standards, and guidelines. The policies were stated on the public website and communicated through training. Software reviews were required procedures supported by policy, and most IHEs in the study used the HECVAT instrument to meet compliance. There was a positive relationship between institutions having a policy and a coordinator. There was also a positive relationship between institutions having a written plan and having an OCR investigation or lawsuit.

Discussions and Recommendations

Accessibility conveys that people of all abilities and disabilities are important and have a place in this world. Research shows that digital accessibility practices are not only beneficial for students with disabilities, but it is also valuable for all adult learners (Lazar et al., 2015; Nash et al., 2023; Tobin & Behling, 2018). Steps taken to ensure digital accessibility should be part of everyone's workflow to improve access to institutional programs and services independent of device types and lower barriers to accessing content.

My data suggests ways to effectively improve higher education digital accessibility approaches to move the needle towards digital accessibility maturity. Below are three primary recommendations with suggested best practices for institutional approaches to digital accessibility.

Prioritize Digital Accessibility

Develop a digital accessibility program that prioritizes digital accessibility**.** There is no *one-size-fits-all* approach to institutional-wide digital accessibility. However, adopting a proven approach to improve digital accessibility moves efforts towards being less reactive and more proactive. A flexible roadmap and scalable plan provide a foundation for current and future efforts to bolster communication, grow adoption, support goals, and understand organizational needs.

Coordinator. Designate a person to serve as the head of accessibility efforts across the university. A practical way to cultivate expertise at an institution is to train up experts from within or hire people who already have the expertise (Bohman, 2007, para. 36). The coordinator position should have sufficient authority and expertise to guide the program, make decisions, and plan organizational-wide efforts. The comparison of IHE1 (with a full-time centralized coordinator overseeing all accessibility efforts) to IHE2 (who had a centralized coordinator who wasn't replaced after retirement) to IHE3 (with a compliance officer *with limited scope*) provides a rich opportunity for discussion of both right and wrong ways to appoint a person to oversee digital accessibility policies and programs. Designating a coordinator like *a performative box-checking activity* ("we hired a person, so we're all done now") is an ineffective approach. Digital accessibility efforts overseen by a coordinator alleviate a disorganized, ad hoc approach to digital accessibility and provides defined leadership, unified message, centralized reporting, and

consistency across departments. The benefit of an IHE with a dedicated coordinator is often they are the campus *champion* that advocates for resources and funding, oversees the consistent application of practices, and regularly reports to leadership. The one perceived drawback of so much reliance on a digital accessibility coordinator is that bulk of advocacy, expertise, and knowledge is held by one and therefore it makes the institution vulnerable if the coordinator position is vacated.

Centralized Processes. Move away from *siloed* efforts with little or no interaction between departments. In a siloed approach, units are responsible for sourcing their own resources, defining policies, and providing support services for their staff. Public colleges and universities would benefit from a unified plan and process to implement digital accessibility that includes all levels of the organization—both administrative and academic units. It is more challenging to comply with a digital accessibility plan in a decentralized environment than in a centralized context. However, those challenges can be overcome through an effective communication and management strategy across the units. Centralized processes foster tracking and reporting on digital accessibility efforts across the institution and shared resources. On the flip side, some risks to a centralized approach include being under-resourced and overly reliant on one entity or person for direction and advocacy related to accessibility on campus.

Coordinated Planning. To be effective long-term, accessibility efforts should be practiced and modeled within each administrative unit. To sustain best practices, departments would benefit from mentors or sponsors regularly communicating with a designated entity or person overseeing digital accessibility efforts. A digital accessibility standing committee that meets regularly could be the central hub of a coordinated approach. A committee benefits from having representation from senior leadership and can be the mechanism for shared governance

and oversight. Committees or councils provide a mechanism for broad input, feedback, consensus-style decision-making, and communication to all levels of hierarchy.

Avoid Technology-Only Solutions. Technology-only solutions do not accurately assess all areas of compliance. Over-reliance on "technology-only" solutions like automatic content scanning tools does not ensure equal access experiences for end users. Be proactive about applying human usability testing of digital content and interfaces in addition to using an automated scanning tool. Human usability testing is a reliable solution to checking things not typically included in automated content scanning.

Higher Education Community Vendor Assessment Tool. Reviewing software before purchasing avoids the problems and costs of retrofitting and making changes after deployment. Adopt the HECVAT (EDUCAUSE, 2021) instrument helps to ensure accessible software is procured before deployment. Requiring or encouraging vendors to provide a completed HECVAT as part of the purchase process is one possible solution and response for ensuring software is accessible before it is deployed. Adopting the HECVAT instrument and process helps an institution ensure compliance and move towards a mature digital accessibility plan.

Official policy for digital accessibility drives practices. Institutions should have a meaningful, understandable, and realizable digital accessibility or EIT policy that outlines expectations, standards, best practices, compliance guidelines, and who is responsible. A policy has no value to the institution if those affected don't understand or follow it. An accessibility policy is more effective when supported by adequate resources and funding. Leadership should prioritize accountability measures to ensure the policy is upheld and implemented by those it affects. A wide-scale awareness campaign or initiative accompanying a policy is beneficial for communicating expectations across units.

Prioritize Student Needs

Expand meaningful training for faculty. Training faculty on best practices along with demonstrating *how* it improves access to digital content is a great way to increase awareness of *why* digital accessibility is so important. Training should include peer-to-peer learning and faculty mentoring opportunities that can lead to feeling understood. Training should also include the demonstration of assistive technology used by students, which aids faculty understanding of why accessibility practices need to be a priority. Seeing how a screen reader functions in an actual online course is often an illuminating training experience for faculty.

Provide consistent assistive technology support for students. Institutional approaches to digital accessibility should include consistent and reliable support for students using assistive technology. There should be designated and trained staff to provide uniform assistance to students who need help removing content access barriers and processing captioning requests.

Be Less Reactive and More Proactive.

Limitations and Opportunities for Future Research

The primary limitation of this study is that a small number of universities participated in this study. Based on this sample selection process, the conclusions drawn as a result of the findings from this study may not generalize to broader colleges and universities in the United States. In order to mitigate the limitation of a possible lack of generalizability to the broader population, multiple roles and responsibilities from three different universities were included instead of only one role from each university.

The study's primary limitation was that because participation in this study was voluntary, there may have been self-selection bias regarding which members of participating institutions decided to participate. It is possible that administrators with interest in disability research were more likely to participate, for example, and these individuals could also be expected to have a higher level

of awareness of accessibility. The limitation was examined by comparing the university roles, responsibilities, and length of employment at the university to the corresponding parameters of the three universities in the inductive analysis process of this study. I spoke with only a small segment of the public university community with an institutional size of under 15,000 students. Interviews did not include faculty nor university Presidents. Because only four or five participants from three universities participated in the study, a reliable correlation could not be drawn between bias toward disability research and awareness of digital accessibility practices.

The influence of particular approaches to digital accessibility implementation on higher education practices was not assessed for every academic unit since my focus was on administrators' knowledge of digital accessibility efforts at their institution. In addition, the project did not include faculty, and I might have yet to access the full range of participants' knowledge about this issue; therefore, I cannot be sure that my findings suggest patterns for further study but are not yet broadly generalizable.

Another limitation is researcher bias, and Yin (2006) posited that researcher bias could lead to a lack of precision when the researcher dismisses certain patterns or mistakenly identifies non-existent ones. As a subject matter expert in digital accessibility employed at one of the universities that participated in this study, I attempted to mitigate researcher bias by utilizing thematic coding (Adams et al., 2022; Saldaña, 2013), content analysis methods, demoing, journaling, debriefing with my committee members, triangulation, and displaying tables and matrixes of codes as shown in Table 5.

Future study is recommended on approaches to digital accessibility in higher education that include perspectives from faculty, institutional senior leadership, and students. Research studies have just begun to scratch the surface of understanding centralized approaches digital

accessibility in higher education for small to medium-sized institutions. While most of the participants made comments of relevance to accessibility practices, providing me with a rich set of pertinent data, further research focused on case studies of successful small to medium-sized campus-wide approaches is crucial to the success of online accessibility. In addition, continuing to explore the implementation of institutional models such as the Jackson 4P Framework related to online course accessibility will be an important step in sharing information among higher education institutions in the United States.

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Appendices

Appendix A. IRB Decision

Date: January 23, 2023

The University of South Dakota
414 E. Clark Street
Vermillion, SD 57069

PI: Karen Card
Student PI: Angela Jackson
Re: Initial - IRB-22-304, *Closing the Digital Divide - Understanding Organizational Approaches to Digital Accessibility in Higher Education*

The University of South Dakota Institutional Review Board has rendered the decision below for this project.

Decision: Not Human Subjects Research; IRB Review Not Required

Dear Karen Card,

The University of South Dakota Institutional Review Board (IRB) office staff has reviewed the information you submitted. Based on that review, we have determined these activities do not meet the regulatory definition of research, and do not fall under the IRB's purview for the following reason:

Although the activities described in your application are considered research, researchers will not be obtaining information about living individuals (*see* 45 CFR 46.102(e)(1), (f)). Your project will only be obtaining information about one or more organizations at which the research will be conducted; these activities do not meet the definition of research with human subjects.

If, in the future, you decide to collect information about living individuals, you will be required to submit an application to the USD IRB for review.

Please maintain a copy of this letter in your study file for documentation that this project does not meet the regulatory definition of human subject research and does not require IRB approval. If you have any questions regarding our submission or review process, please do not hesitate to contact me at 605-658-3743 or irb@usd.edu.

Sincerely,

The University of South Dakota Institutional Review Board

Jackie Stelling

Jackie Stelling, MBA.
IRB Reviewer, Offic of Human Subjects Protection
University of South Dakota

Appendix B. Interview Protocol

1. How are you involved in digital accessibility efforts?
2. How does your department influence digital accessibility efforts?
3. How long has your institution (department) been involved with digital accessibility efforts?
    1. What was learned during the process of rolling out a digital accessibility initiative within your department?
    2. Was there any particular event that kickstarted the process?
4. What was the process your institution used for digital accessibility planning?
    1. How does the current maturity of your organization's digital accessibility plan affect the adoption of practices across the institution?
    2. How did a coordinated or centralized approach influence the process?
5. What was the process your institution used when making its digital accessibility policy?
6. How does your institution carry out digital accessibility practices?
    1. How do current digital accessibility practices across the organization impact reaching goals and maturity?
7. How does your institution involve people in digital accessibility efforts?
    1. What approaches does your institution have for professional development and training for topics related to digital accessibility and Universal Design for Learning?
    2. What tools or resources does your institution provide to staff and faculty to help meet digital accessibility?

Appendix C. Consent Form to Participate in the Research Study

CONSENT FORM TO PARTICIPATE IN A RESEARCH STUDY
The University of South Dakota

Title of Project: Closing The Digital Divide: Understanding Organizational Approaches to Digital Accessibility in Higher Education

Doctoral Student Investigator: Angela Jackson, Delzell Education USD Building, Vermillion, SD 57069
angela.jackson@usd.edu, (605) 658-6183

Principle investigator: Karen A. Card, Ph.D., Delzell Education USD Building #201E, Vermillion, SD 57069
Karen.card@usd.edu, (605) 658-6621

Invitation to be Part of a Research Study
You are invited to participate in a research study. To participate, you must be actively involved in digital accessibility efforts. Taking part in this research project is voluntary. Please take time to read this entire form and ask questions before deciding whether to take part in this research project.

What is the study about and why are we doing it?
The purpose of the study is to explore different approaches of implementing digital accessibility at a medium-sized university. Also, of interest is to investigate the effectiveness of a centralized, coordinated approach in the planning and implementation of digital accessibility in higher education organizational-wide. About 15 people will take part in this research from three different institutions in the northern tier of the U.S.

What will happen if you take part in this study?
You will be asked to complete a 60-minute recorded interview via Zoom with a researcher. Otter AI will be used to generate a written transcript. During the interview, the researcher will first go over the information in this form to make sure you understand it. Next, the researcher will ask 5 open-ended semi-structured questions about your involvement in digital accessibility efforts within the areas of policy, planning, and practices.
Later, your interview recording transcript will be cleaned up for accuracy using Verbit AI. In the coding process, your identifying information such as names, will be removed, and we will email you a copy of the transcript to review to make sure it is accurate. Once we have verified the transcript is accurate, the recording will be destroyed.
What risks might result from being in this study?

There are no risks in participating in this research beyond those experienced in everyday life.

What are the benefits from this study?
Although you will not directly benefit from being in this study, others might benefit because research about well-established approaches to digital accessibility in higher education has immense transferability to other institutions interested in campus-wide digital accessibility practices and strategies. The research might help administrators understand how digital accessibility affects college students with disabilities. The information could help improve program planning and make student services better for students with disabilities.

The University of South Dakota Provost office will send you a letter of participation and appreciation for your involvement in the study that you can use on your resume or curriculum vitae. The researcher will also present a free 50-minute workshop to staff and faculty with the research results and recommendations.

How will we protect your information?
I will protect the confidentiality of your research records by keeping them in a secure password-protected folder on my personal computer only accessible by myself.

Your identity (privacy) will be protected, and the confidentiality of the data will be maintained. All recordings will be done in my private office in a confidential setting.

You have the right to review/edit the audio recording and the transcript. Only the researcher and the participant have access to the recordings and the transcript. The recordings are solely used for educational purposes. The audio recording will be destroyed as soon as the final transcript is finished.

I give consent to be audiotaped during this study.

Please initial: ____ Yes ____ No
I give consent to be videotaped during this study.
Please initial: ____ Yes ____ No
I give consent for my quotes to be used in the research; however, I <u>will not</u> be identified.
Please initial: ____ Yes ____ No

The identity of the participants will be guarded. Interviews being conducted will be kept anonymous by using a pseudo-name.

The records of this study will be kept confidential to the extent permitted by law. Any report published with the results of this study will not include information that could identify you. I will

protect the confidentiality of the research data by storing your name and any other information that can directly identify you separately from the data collected as part of the project. All recordings will be destroyed when the final transcript is completed. Transcripts will be destroyed when the research is complete.

It is possible that other people may need to see the data we collect. These people work for the University of South Dakota, Karen A. Card, and other agencies as required by law or allowed by federal regulations.

How will my information be used after the study?
After this study is complete, your deidentified data may be stored indefinitely in secure cloud storage and shared with other researchers through an open-access repository. Your de-identified data will NOT include your name or other personal information that could directly identify you.

Your study data will not be used for future research.

Your Participation in this Study is Voluntary
It is up to you to decide whether to be in this research study. Even if you decide to be part of the study now, you may change your mind and stop at any time. You do not have to answer any questions you do not want to answer.

Contact Information for the Study Team and Questions about the Research
The researchers conducting this study are Angela K. Jackson, Division of Educational Administration Adult and Higher Education, and Dr. Karen A. Card. You may ask any questions you have now. If you later have questions, concerns, or complaints about the research please contact Angela K. Jackson at angela.jackson@usd.edu or the research advisor: Karen A. Card karen.card@usd.edu.

If you have problems, complaints, or concerns about the research, questions regarding your rights as a research subject, or if you want to talk with someone independent of the research team, you may contact The University of South Dakota Office of Human Subjects Protection at irb@usd.edu or (605) 658-3743.

Your Consent
Before agreeing to be part of the research, please be sure that you understand what the study is about. Keep this copy of this document for your records. If you have any questions about the study later, you can contact the study team using the information provided above.

Appendix D. Individual Participant Demographics

Table 9

Individual Participant Demographics

Participant	Title	Years	Areas of Responsibility
P1-Jane	Digital Accessibility Coordinator	8	Oversee all digital accessibility efforts on campus - committee chair, institutional planning, remediation practices, training, reporting, reviewing, software reviews, recommendations, assistive technology support, website evaluations, budget setting
P2-Lucy	Chief Information Officer	26	Gatekeeper of implementing new tools and software; security and accessibility reviews for software; oversight of all EIT on campus; live caption scheduling
P3-Mary	Distance Librarian	27	Remediation practices, committee member, trainer, technology support
P4-Becky	Director of Center for Teaching and Learning	13	Director of the center, provide training in UDL and digital accessibility; Professor of economics, statistics, and analytics
P5-Pam	ITS Application Manager/Web Manager	23	Application management, handling the CRM, website management for two sites
P6-Tim	Chief Information Officer	14	Oversee the ITS department and accessibility technologies team; vendor software reviews for compliance
P7-Jeff	Web Support Specialist	3	front-end website UI developer and accessibility review of websites
P8-Tina	Office of Disability Equity	19	Process student accommodation requests; trainer; champion;
P9-Lisa	Alternative Formats Specialist	17	Digital accessibility specialist: ensuring that books, documents, videos and other media are accessible for students with print disabilities
P10-Rita	Director of Teaching Excellence and Support	14	Faculty professional development, Universal Design for Learning professional development, accessibility training for faculty, instructional design, committee member
P11-Lea	Student Success Librarian	3	Coordinator for services for students with disabilities in the library; assistive tech support
P12-Diana	Information Technology Accessibility Officer	5	Ethics and compliance office; procurement software reviews for Compliance, trainer, responsible for EIT policies
P13-Deb	Director of Instructional Design	10	Instructional design, assess the quality of online programs, training on practices, professional development
P14-Eva	Web Communications	16	University-wide committee chair; planning; website evaluation; trainer

Note. Fourteen participants involved with digital accessibility efforts from three sites participated in the study.

Appendix E. Archival Data Analysis List

Table 10

List of Artifacts with Data Analysis Coding

Artifact ID	Type	Date	Participant	Theme	Frame
1	University strategic plan	12/12/2020	IHE1	Goals & expectations	Plan
2	Arts & Science strategic plan	8/22/22	IHE1	Goals & expectations	Plan
3	Digital accessibility policy	12/15/2018	IHE1	Compliance	Policy
4	Library list of resources	12/16/2022	IHE1	Resources	Practices
5	University digital accessibility resource page	2/28/22	IHE1	Resources	Practices
6	CTL digital accessibility resource guide	12/22/2022	IHE1	Resources	Practices
7	CTL UDL initiative	3/1/2016	IHE1	Implementation approaches	Practices
8	Strategic plan update and action plan	3/17/2023	IHE1	Goals & expectations	Plan
9	OCR resolution letter	11/3/2020	IHE1	Compliance	Policy
10	Digital accessibility committee	5/21/2019	IHE1	Implementation approaches	People
11	Digital accessibility goals	3/16/22	IHE1	Goals & expectations	Plan
12	QA Rubric Std. 8 - Accessibility	12/1/2020	IHE1	Compliance	Practices
13	University strategic plan	12/1/2020	IHE2	Goals & expectations	Plan
14	EITA policy and procedures	2014	IHE2	Compliance	Policy
15	Web accessibility guidelines	2015	IHE2	Compliance	Practices
16	University web accessibility resources	1/5/2023	IHE2	Resources	Practices
17	EIT accessibility and procurement procedure	2015	IHE2	Compliance	Policy
18	Electronic accessibility resource page	2017	IHE2	Resources	Practices
19	Digital accessibility/ADA charge	3/17/2015	IHE2	Communication	People
20	ADA team members	3/17/2023	IHE2	Implementation approaches	People
21	OCR resolution agreement	5/8/2013	IHE2	Compliance	Policy
22	NFB press release on OCR settlement	3/19/2014	IHE2	Communication	Policy
23	CIO biography	3/1/2023	IHE2	Resources	People
24	Just Practice for Disability Rights	2020	IHE2	Implementation approach	Practices

Artifact ID	Type	Date	Participant	Theme	Frame
25	Accessibility commitment statement	3/19/2023	IHE2	Communication	Policy
26	Disability services director bio	3/1/2023	IHE2	Resources	People
27	UDL principles	2/1/2020	IHE2	Goals & expectations	Practices
28	Inclusive course design principles	2/2/2020	IHE2	Goals & expectations	Practices
29	Digital accessibility presentation	5/5/2021	IHE1	Communication	Practices
30	Coordinator job description	1/30/2020	IHE1	Resources	People
31	Strategic plan goals and objectives	12/1/2018	IHE3	Goals & expectations	Plan
32	EIT policy	5/18/2021	IHE3	Compliance	Policy
33	Commission on persons with disabilities	2015	IHE3	Communication	People
34	Coordinator role	2020	IHE3	Resources	People
35	Statement of accessibility for syllabi	2023	IHE3	Communication	Policy
36	About the CTL	2023	IHE3	Resources	People
37	Course design partnerships-CTL	2023	IHE3	Resources	People
38	Resources for accessible teaching-CTL	2023	IHE3	Resources	Practices
39	QA checklist	2023	IHE3	Resources	Practices
40	Online syllabus template	2023	IHE3	Resources	Practices
41	Ally course report assignment	2023	IHE3	Resources	Practices
42	Procurement recommendations	2007	IHE3	Goals & expectations	Policy
43	Moving from accommodations to accessibility	2017	IHE3	Goals & expectations	Practices
44	Library services for people with disabilities	2023	IHE3	Resources	Practices
45	Digital badges	2023	IHE3	Resources	Practices
46	Ally communication	2023	IHE3	Communication	Practices
47	Vison, mission, and values	2023	IHE3	Goals & expectations	Plan
48	Disability resources	2023	IHE3	Resources	People
49	Letter on commissions	2020	IHE3	Communication	People
50	Diversity, equity, and inclusion plan	2020	IHE3	Goals & expectations	Plan
51	Closed captioning	2023	IHE3	Resources	Practices
52	Accessibility training	2023	IHE2	Communication	Practices

Note. The list of archival data items was identified and categorized by theme and analyzed within the corresponding J4P frame