Accessibility Work in Academia: Balancing Needs, Bridging Gaps, and Breaking Down Barriers

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Universities grow increasingly committed to equal access for individuals with disabilities, balancing the appearance of inclusion while upholding values of academic rigour. Within these universities, employees working in accessibility must mediate an unstable web of organizational and technological infrastructures. This study examines the government mandates, organizational structures, processes, and policies in a research university in Canada aimed at meeting the accessibility needs of its students. Our findings suggest that there is an interplay between informal and formal practices to navigate institutional systems. Technology serves as a mediator in the "behind-the-scenes" work that occurs at the intersection of infrastructures. Based on these findings, we provide recommendations to better support accessibility work in universities. We suggest the use of seamful design to support accessibility work, as it aligns with the dynamic nature of disability and distributed networks of accessibility work. We recommend designers foster interdependence to support workers who navigate overlapping infrastructures and breakdowns at the seams.

CCS Concepts: • **Human-centered computing → Empirical studies in HCI**.

Additional Key Words and Phrases: accessibility, universities, post-secondary education, disabilities, accommodations, infrastructures, networks

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1 Introduction

In Canada, disabled students, faculty, and staff in post-secondary institutions receive support through various forms of accessibility work, facilitated or mediated by technologies. Such technologies include learning management systems (LMS), online portals for accessibility services, and telecommunication software. Accessibility in universities[1] is understood and addressed from a variety of perspectives [29, 45]. Accessibility work typically involves providing individual accommodations for disabled students [8, 28, 29, 77]. Other forms of accessibility focus on educating the academic community about accessibility issues [24, 44, 60] and encouraging instructors to adopt

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[1]In Canada, "university" refers to a post-secondary institution that awards bachelor's degrees or higher, whereas "college" generally refers to a two-year vocational or trades-focused school.

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practices that make courses more universally accessible to students [34, 45, 51, 62, 65], which, in some cases, reduces the need for individual accommodations [32, 74]. Commonly, universities draw on the principles of Universal Design for Learning (UDL) [18, 29] to pursue the goal of "universally accessible" classrooms [19, 74].

However, accessibility efforts at universities are entangled in a web of conflicting priorities resulting from institutions wanting to be perceived as both inclusive and prestigious. These institutions promote themselves as safe, progressive, and inclusive spaces for students [26]. They publicize their compliance with accessibility laws, such as the Accessibility for Ontarians with Disabilities Act (AODA) — the province of Ontario's notable disability legislation [63] — to enable active and equal participation for disabled individuals. Universities also strive to maintain a reputation for academic rigour and prestige, shaping how accommodations are provisioned [29, 94]. The shift to online learning during the COVID-19 pandemic has prompted institutions to increasingly adopt digital technologies to regulate the balance between accessibility and the enforcement of academic integrity. After COVID-19 lockdowns were lifted, remotely distributed teams and online working arrangements have further highlighted the embedded nature of technology within organizational and educational settings at universities. The blurring between offline and online labour presents an opportunity for designs that both standardize principles of accessibility and allow for flexible approaches to service delivery.

Therefore, our research study is centred around the following question:

> *What is the nature of accessibility work in post-secondary institutions, and how is it being shaped by socio-technical, organizational, and legal factors?*

To answer this question, we conducted semi-structured interviews with 12 staff members who work in accessibility at a public university in Ontario, Canada. Our study focused specifically on university staff, as they are responsible for the operational aspects of the university and are therefore either directly or indirectly involved in the implementation and management of accessibility policies and infrastructure.

Much of the existing literature on accessibility in post-secondary education is focused on individual perspectives of access [4, 47, 49, 62, 71, 82], whereas our paper aims to contribute to Computer-Supported Cooperative Work (CSCW) literature concerned with the organizational aspects of accessibility work within universities. We draw on organizational studies literature from CSCW scholarship, specifically research focusing on infrastructures [87, 88, 96], to investigate the socio-technical systems, policies, and practices that support and enable accessibility work. Additionally, we use the concept of articulation work [11, 80, 91] to recognize the invisible labour that can be necessary for coordination. We also build upon CSCW literature that has documented the ways in which informal labour practices among actors are rendered (in)visible [89], especially when they involve marginalized individuals. We discuss practices performed by accessibility workers in pursuit of equitable access and participation in relation to the organizational structures and underlying socio-technical infrastructures that enable informal collaborations. In doing so, we also engage with HCI and CSCW scholars who have emphasized the collaborative nature of accessibility, notably the framework of "interdependence" [10, 58].

Our research uses an infrastructural lens to examine the relational nature of accessibility work. We examine how infrastructural seams and articulation work surface the relational ties and tensions that accessibility workers navigate to provide collective access. Our findings indicate that accessibility work is conducted in a highly distributed manner, with individuals working in disparate departments to advance and improve accessibility within the university. We identify four primary themes: 1) the impact of the pandemic on baseline accessibility and the increased prevalence of UDL, resulting in greater alignment regarding access; 2) fragmented understandings and tensions in

accessibility work, which complicate accessibility efforts; 3) the role of networks in bridging gaps arising from infrastructural and technological barriers; and 4) the interplay between dynamic and static knowledge shaping the operational challenges of accessibility work. We relate these themes to recommendations offering insights into supporting accessibility work at universities. By emphasizing interdependence and seamful design [20], we argue for approaches that balance standardization with flexibility and recognize accessibility work as a collective responsibility.

2 Related Work

2.1 Accessibility in Universities

While differing perceptions of disability shape how universities approach accessibility [29, 45], accessibility typically entails the provision of individual accommodations to people with disabilities [8, 28, 29, 77] to enable equitable participation in their courses. Accommodations provided by universities include changes to classroom practices, learning tools, or students' learning environments.

For formal accommodations to be granted, disabled students must initiate requests and provide proof of disability through medical documentation [52, 53]. After this initial intake, support is given to students on a case-by-case basis [28]. Scholars have suggested that, as the primary service offered to disabled students, medicalized individual accommodations reinforce the notion of disability as a deficit — one that the university must correct to ensure students conform to the "dominant logic of classroom pedagogy" [29]. Scholars have further problematized the notion of accommodations, arguing that they are a short-term solution to help students retroactively adapt to their courses, ultimately failing to address deep-rooted issues stemming from ableist perspectives in universities [29, 77]. Further, Fovet [33] notes that although the number of student accommodation requests has tripled over the past decade, staffing levels have not increased proportionately, limiting the capacity to adequately provide support to disabled students. While prior work has focused on assistive technologies to address the need to accommodate students, there remains a gap in research on technologies that support collaborative access-making within higher education. Recently, in the Turkish context, Yildiz et al. [101] examined how gatekeepers shape access for students with disabilities within a higher education setting.

Another critical area of accessibility work involves educating the academic community about accessibility issues [24, 44, 60] to promote the widespread adoption of accessibility practices within classrooms [34, 45, 51, 62, 65] and reduce the need for individual accommodations [32, 74]. Universities typically draw on the principles of Universal Design for Learning (UDL) [18, 29] in pursuit of creating "universally accessible" classrooms [19, 74]. UDL emphasizes the design of learning environments that accommodate a range of student learning styles and needs by incorporating multiple forms of representation, expression, and engagement [9, 19]. Scholarship about UDL often emphasizes the implementation of technology in classrooms to support student learning [5, 6, 37, 46]. However, implementing UDL is not without challenges. Scholars critique UDL for its lack of mechanisms to incorporate student feedback [18, 32, 70] and for its potential to inadvertently erase the plurality of disability when solutions are generalized and framed as "universal" [12, 29, 43, 72].

As the nature of education continuously evolves, designing inclusive pedagogy requires navigating tensions among student needs, institutional attitudes toward disability, and the technologies underpinning formal structures and processes. These systemic issues call for more research on collaborative and infrastructural approaches to accessibility in universities.

2.2 Technologies, Accessibility Work & Interdependence

In recent decades, there has been a shift in how disability is defined and understood by scholars [29, 64], with HCI/CSCW research evolving alongside socio-political discourses on disability [54]. The shift from the medical model of disability, focused solely on 'fixing' individual impairments, to a social model that redefines disability as systemic [8] has been mirrored by HCI research positioning people with disabilities as active agents rather than passive recipients [86, 92].

Early HCI and accessibility research often prioritized the concept of independence as an important metric [10, 67, 68] to assess the effectiveness of technology design interventions or policies. HCI and CSCW scholars have subsequently emphasized the collaborative nature of accessibility — for example, how accessibility is co-created [15]. The concept of 'social accessibility' [81] takes into account the broader socio-technical arrangements that shape everyday technology use. Central to these approaches is the "interdependence" framework, rooted in disability justice, which challenges the ideal of independence; interdependence acknowledges and leverages the various connections and relationships essential for functioning and well-being [10, 58]. Scholarship also highlights the invisible work done to ensure accessibility, especially in mixed-ability spaces [16, 27]. Bennett et al. argue that because interdependence "considers everyone and everything in an interaction to be mutually reliant, this framing can foreground some of the historically-ignored (but extremely important) work done by people with disabilities" [10].

Aligned with these perspectives on collaborative access work, scholars in HCI and CSCW investigate how groups of people actively create and negotiate accessibility in practice, with particular attention to the role of socio-technical infrastructures in shaping access-making processes [66, 100, 101]. Mack et al. [55] identify "anticipating with adjustments" as a strategy used to navigate and sustain access within complex institutional environments. Our research builds on these frameworks by using an infrastructural lens to examine the relational nature of accessibility work that enables accessibility workers to collaboratively address accessibility gaps.

2.3 Organizations & Infrastructures

To explore the complex interplay of technology, organizational structures, and accessibility in university settings, we draw from organizational literature within HCI and CSCW scholarship on infrastructures, articulation work, and boundary objects.

Star and Rubhleder [88] define infrastructures as socio-technical systems embedded within various technologies and social arrangements. Technology is not merely a tool or technical foundation upon which activities or operations run; instead, it is an integral part of complex social systems within organizations. These understandings of infrastructures have been adopted into organizational studies to examine the intricate socio-technical and informational terrain and labour practices of workers [13, 42].

In particular, we are interested in Star's [87] characterization of infrastructures regarding their visibility upon breakdown. Breakdowns surface the relational nature of infrastructures, allowing for an investigation into how universities prioritize and execute repairs. Star [87] asserts that backup mechanisms or procedures become markers of breakdowns, further emphasizing the visibility of infrastructures. In particular, information systems are integrated in ways that may necessitate workarounds for interactions to proceed around them. Consequently, this leaves gaps in work processes that require real-time modifications or additional efforts from organizational actors [87].

Furthermore, the concept of articulation work, as outlined by Strauss [91], is pivotal in understanding how cooperative work arrangements are managed within these infrastructural contexts. Articulation work, the work done to ensure that distributed tasks in cooperative settings align effectively [80], involves: 1) meshing tasks, 2) meshing worker efforts, and 3) meshing workers with tasks

implicated in their work [91]. This process requires adequate forms and means of communication between workers in completing different tasks and navigating changing work environments [11]. Such means of communication may include information sharing between organizational "silos," which are disparate sub-service units within organizations [78]. In large and dynamic environments, workers use "mechanisms of interaction" such as schedules, standard operating procedures, and explicit allocation of resources and responsibilities to conduct articulation work while concurrently performing their other tasks [80].

In examining interactions or overlaps between infrastructures in heterogeneous environments such as universities, we also use the concept of "seams" [96]. Investigating "seams" allows for identifying underlying tension points, emphasizing incompatible aspects between infrastructures. Previous HCI and CSCW research has examined various contexts related to infrastructural seams and breakdowns [1, 7, 31, 35, 59, 69, 76, 84]. Notably, they emphasize constraints pertaining to localized infrastructures, each coming with respective procedures and policies [35]. Research has also examined exclusionary systems and how users reclaim their rights to be included through negotiations with infrastructure [59, 84].

Moreover, the concept of "boundary objects" as proposed by Star and Strauss [89] is significant as it allows for examining collaboration within and across organizational boundaries. Boundary objects, as artifacts, are uniquely flexible and interpretable, facilitating coordination and collaboration across boundaries. Understanding the role of boundary objects in organizational settings such as universities enables an examination of the articulation work that facilitates workers in supporting accessibility.

The notions of infrastructures, articulation work across seams, and boundary objects allow us to examine the organizational dimension of university accessibility work and how it is conducted collaboratively by individuals in disparate departments and roles. Further, they help us understand inherent tensions in creating inclusive learning environments and the role of frameworks (such as UDL) in facilitating coordination across institutionally imposed boundaries. In this study, we consider the interplay of laws, policies, standards, and work practices occurring across accessibility-related infrastructures.

3 Background: Balancing Institutional Priorities with Inclusion

The factors that universities consider when developing accessibility-related practices, policies, and initiatives extend far beyond the merits of accessibility work. In Ontario, Canada, the neoliberal view of higher education as a competitive market positions students as primary customers, influencing organizational activities, including accessibility [36, 79]. Within this "student as customer" model, universities compete to attract students by promoting the quality of education they provide [36, 75].

Universities often align accessibility efforts with institutional goals when they enhance the institution's perceived commitment to inclusion, serving as a marketing tool to attract prospective students [29]. For example, a multicultural and accessible campus could provide a more supportive and enriching experience for all students [25], improving the overall appeal of an institution [2, 3]. Universities strive to project an image of diversity and inclusion through various online statements and marketing materials [26], contributing to their reputation as safe learning environments. However, when accessibility is not part of the criteria for attracting new students or satisfying current students, it is largely guided by compulsory actions dictated by relevant laws and regulations, such as the Accessibility for Ontarians with Disabilities Act (AODA) [38, 63, 73].

The AODA, enacted to establish accessibility standards for various domains, outlines five key standards: information and communication, employment, transportation, design of public spaces, and customer service [63]. For universities, the customer service standard often receives the most attention, aligning with the notion of "student as customer" [36, 95]. Although there is no specific

standard for post-secondary education, academic institutions must comply with extant standards where they are applicable [63]. The AODA requires institutions to make "reasonable efforts" to ensure accessibility, but these efforts are often limited by what the institution deems "feasible" [94].

Advocates for access and inclusion within universities often face tensions with academic freedom [56, 57]. These tensions reflect broader challenges in reconciling Diversity, Equity, and Inclusion (DEI) initiatives with entrenched principles of meritocracy. This dynamic raises questions about equity, fairness, and institutional values among scholars; research suggests that while DEI efforts are often supported when seen as enhancing the experiences of non-disabled students, they face resistance when perceived as compromising academic standards or unfairly advantaging certain groups [93, 98]. Moreover, the labour of DEI and accessibility workers has historically been undervalued, with limited institutional support and few enforceability mechanisms to ensure the effectiveness of policies [3, 50, 90].

A major critique of the AODA is its weak enforcement, with only 25 officials tasked with ensuring compliance across more than 460,000 organizations and government entities [30]. Additionally, the AODA does not include a formal complaint mechanism. Instead, individuals must rely on the Ontario Human Rights Code, which provides an alternative avenue for addressing disability-related discrimination through complaints to the Ontario Human Rights Commission [22, 23]. The lack of enforceability of these statutes plays an important role in shaping how accessibility-related policies are implemented in universities and influences the day-to-day efforts of accessibility workers.

4 Methods

This study involved conducting and analyzing 12 semi-structured interviews with employees of a large research university in Ontario. The objective of the interviews was to understand how each participant's role addressed accessibility and how accessibility-related initiatives, strategies, and actions were conducted and coordinated among disparate individuals and departments.

Participants were identified and recruited using a combination of purposive and snowball sampling. Initially, we faced challenges in finding participants for the study. Many university staff members were difficult to contact and were unavailable during public "office hour" times. Furthermore, several prospective participants cited a specific policy prohibiting their participation in research, despite the policy not applying to the type of research being conducted. Follow-up attempts for clarification received no response from these individuals.

For approximately two months, we collaboratively mapped accessibility-related spaces at the university. Based on job titles, job descriptions, and other publicly available information from the official university website, we identified the departments and key stakeholders involved in accessibility work (see Figure 1). During the interview process, we employed snowball sampling to identify additional participants, updating the map accordingly. This iterative process of collaborative mapping helped ensure our sample was diverse and represented different aspects of accessibility work at the university. Upon reaching 12 participants, interviews largely reflected earlier responses, indicating data saturation.

Participants completed a consent form detailing their rights and data use before the study. Interviews ranged from 30 to 90 minutes in duration and were conducted in person or via Zoom. Ten of the twelve interviews were recorded; for the two unrecorded sessions, one researcher conducted the interview while another took detailed notes.

Interview questions were developed to enable participants to describe their work providing accessibility-related services. The interview protocol included questions about existing organizational structures, collaborations, processes, record-keeping strategies, and policies shaping how accessibility labour is carried out. The interview protocol was adapted for each participant based on their specific role, department or office, holistic experiences working for the institution, and

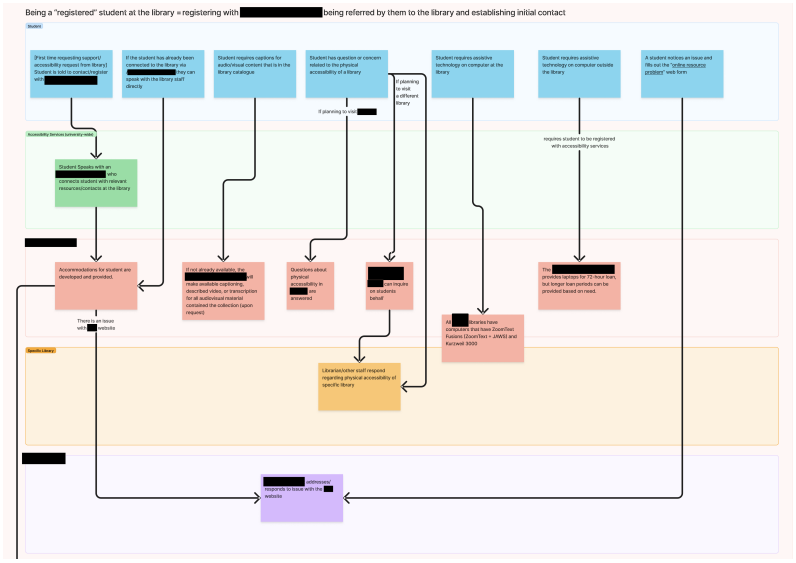

Fig. 1. An example of the mapping exercise done for the library system. Similar maps were created for the primary accommodations office, financial services, health and medical services, services related to the built environment, and DEI-related services. Additionally, specific employees were mapped onto these departments and services, but are not included in the image for privacy reasons.

duties or practices. As there is no institutional scale or mechanism for evaluating an employee's accessibility experience or expertise, the experience levels listed below are based on participants' self-descriptions of their own accessibility experience in their current role. After completion of each interview, researchers transcribed the recordings, replaced participant names with labels, P1 through P12, and redacted all identifying information (Table 1).

Following each interview, we conducted a thematic analysis integrating both inductive and deductive approaches [14]. Transcripts were managed and coded using NVivo12 software. Four researchers initially open-coded a subset of transcripts independently, generating preliminary inductive codes. We collaboratively reviewed these codes, identified relationships among them, and consolidated them into a final coding framework informed by relevant themes from existing literature. This framework guided subsequent axial coding, during which relationships and gaps identified were critically examined and revised iteratively. Iterative rounds of collaborative coding and discussion were conducted, with coding consistency assessed using intercoder reliability, with Cohen's kappa = 0.815, after two final rounds of coding and refinement. The themes identified through the analysis included organizational systems for accessibility in the university, factors shaping the provision of accommodations, institutional memory, and tensions affecting accessibility workers. The thematic results of our analysis are described in our findings.

5 Accommodations & Accessibility Work

The university's accessibility offices offer students a variety of formal accommodations to address learning barriers. As described by multiple participants, accommodations include extended testing time, alternate testing locations, flexible assignment due dates, alternate document formats, access

Table 1. **Study Participants and Their Roles**

P ID	Role	Role Description	Self-described Experience Level
P1	Accessibility Advisor	Identify and suggest appropriate accommodations by consulting with students, instructors, and relevant medical documentation	Experienced
P2	Library Employee	Support library and reference-related accessibility needs of students	Experienced
P3	Capital Projects Manager	Consult and work on capital projects primarily related to physical spaces	New to role
P4	Academic Program Coordinator	Provide support to students regarding academic and university-related challenges	Experienced
P5	Accessibility Officer	Support accessibility initiatives across the university	Experienced
P6	Equity Officer	Intake of discrimination-related issues and provide training to instructors and faculty staff	Experienced
P7	Research Coordinator	Facilitate and support research activities within a specific university department	Experienced
P8	Education Developer	Provide technological classroom support and training for university instructors	New to role
P9	Education Developer	Provide pedagogy training and support for university instructors and teaching assistants	Experienced
P10	Library Employee	Support students in accessing and using library facilities and resources	New to role
P11	Education Developer	Provide pedagogy training and support for university instructors and teaching assistants	Experienced
P12	Academic Administrator	Provide administrative support related to faculty record-keeping and technological repairs	Experienced

to specific software, and access to specific classroom furniture or technologies. Formal accommodations are granted only to students who are registered with accessibility services. P1, an accessibility advisor, described the registration process for accommodations as comprehensive: students are required to complete forms, obtain medical documents as "proof" of disability, and submit these materials through the accessibility services online portal. A meeting is then arranged with an advisor to determine appropriate accommodations based on the student's needs and course learning requirements. Once students are officially enrolled in the system, they receive documents outlining supports they are entitled to use. These documents are used by students to make accommodation

requests from instructors and staff. For example, if a student needs an alternative format, such as digital or audio versions of course materials, an advisor prepares an accommodation letter, which the student downloads from the online portal and presents to their instructor.

Digital technologies play an integral role in both providing accommodations and facilitating institutional processes. For example, many accommodations, such as specialized assistive technologies, applications, lecture recordings, and other forms of supplementary course documentation, exist in digital formats. The central accommodations office manages access to these resources through an online portal, as outlined in the process described above. Learning Management Systems (LMS) also contribute directly to the delivery of educational materials, offering built-in accessibility features that align with institutional policies.

In our findings, we first examine how the COVID-19 pandemic reshaped accessibility work and highlighted Universal Design for Learning (UDL) as a framework for establishing baseline accessibility. Second, we explore the persistent tension between accessibility and institutional priorities, where accessibility is often deprioritized. Third, we discuss the infrastructural and technological barriers that hinder accessibility work and the role of networks in bridging these gaps. Finally, we discuss how the interplay between dynamic and static knowledge shapes the operational challenges of accessibility work.

5.1 The Pandemic, Baseline Accessibility, & the Role of UDL

The COVID-19 pandemic significantly reshaped accommodations, especially following the university's shift from in-person to online instruction. Many participants mentioned how the landscape of accommodations changed during this period. Remote or hybrid courses and programming — allowing students to attend via videoconferencing software — became increasingly sought-after forms of accommodation. Although the university initially fully embraced remote learning, accessing courses remotely has become progressively more difficult since the easing of pandemic restrictions. As P1 noted,

> "... the basic kind of advisement that came down from the Ministry of Education was that these accommodations need to be handed out fairly sparingly and have to be directly linked to disability-related impacts." (P1, Accessibility Advisor)

P1 noted that the provincial government issued strict guidelines that identify remote learning as an appropriate form of accommodation. Participants described how the rise and fall of remote learning closely followed the enforcement of pandemic restrictions, while other accessibility-related initiatives, such as UDL, gained momentum during this time.

Some participants noted that the number of individual accommodation requests had increased since the pandemic began, prompting employees to look beyond individual accommodations and toward proactive strategies that reduce accessibility barriers. Several participants voiced strong opposition to mandating that students go through the formal accommodation process. Among the various initiatives discussed, Universal Design for Learning (UDL) stood out as a key approach to improving the university's baseline accessibility. The university spotlighted UDL during the COVID-19 pandemic, which accelerated the adoption of technology in classrooms and fundamentally changed the way education was delivered and received. P5 and P9 suggested that following a UDL approach to course design would increase the threshold of access, thereby decreasing the number of individual accommodation requests from students. These pedagogical changes brought about by the pandemic have driven sustained interest in accessible course design.

Interestingly, participants did not always use the term "UDL" to describe a set of structured guidelines and principles but instead as a colloquial expression of the broader social justice movement toward barrier-free access and participation of disabled university members. P5 emphasized the

importance of UDL in terms of reshaping institutional culture: instead of the conventional model of pushing students through a one-size-fits-all approach to education, it expanded the definition to include both university education and community. Participants described UDL as a cultural shift that influenced coordinated efforts between departments and individuals of seemingly diverse expertise, interpretations, and objectives.

> "So both faculty and departments are more willing to engage in conversation, which means engaging conversations about models such as UDL, which they want to adopt across the board." (P9, Educational Developer)

UDL continues to serve as a catalyst for broader institutional change, prompting various departments to adopt more informed and inclusive approaches to education. However, implementing UDL requires a substantial investment of time and effort to ensure adequate support for faculty and educators. Given the demanding roles and increasing volume of accommodation requests, the success of UDL hinges on the provision of robust support mechanisms made possible by networks of support and knowledge practices facilitated by organizational actors.

6 Fragmented Understandings, Attitudes, & Priorities: Mediating Tensions in Accessibility Work

While the pandemic catalyzed accessibility initiatives such as UDL, participants highlighted that mediating accessibility work remains a persistent challenge for employees. Participants described the complexities of balancing student needs with the university's competing priorities, including institutional interpretations of academic rigour, differing understandings of legal accessibility requirements, and diversity, equity, and inclusion (DEI) goals. In addition, policies related to technology maintenance often hindered efforts to coordinate accessibility work.

6.1 Differing Interpretations of Accessibility Requirements

Participants suggested that the lack of clarity and enforcement surrounding legal standards, such as the Accessibility for Ontarians with Disabilities Act (AODA), was a significant barrier to accessibility work. Many participants expressed that accessibility often takes a backseat to other institutional priorities due to ambiguity in how laws like the AODA are applied. Notably, institutions are more likely to enforce the Human Rights Code than the AODA, as explained by P5, an accessibility officer: "The AODA itself, I think there's still a bit of lack of understanding about what it means... There's no tribunal for AODA issues, I think we're a bit more sensitivity [sic] to if someone has potentially been discriminated against under the code."

Without clear enforcement mechanisms, accessibility workers often face diminished authority when advocating for inclusive practices. The legal ambiguity in which they work complicates how they mediate varying interests and reduces the perceived value of their perspectives when working on larger projects at the university. As P3 described:

> "Capital projects will be working on a new building...and our recommendation will be, well, to help our grounds team, can you please put in that snow melt system right up to the, like, up to the entrance....But at some point in that project, you know, there's going to be value engineering. So, what are they going to cut? They're going to cut the snow melt system." (P3, Capital Projects Manager)

Without strong legal backing, those advocating for accessibility have to rely on other motivating factors, such as institutional culture, to ease the burden of mediating student accommodations. One avenue that many participants turn to is the provision of information and training for faculty and staff, particularly strategies that go beyond formal accommodations.

6.2 Balancing Academic Rigour with Accessibility

One institutional perspective that may supersede accessibility is the notion of academic rigour. Throughout the interviews, the notion of fairness was mentioned several times, particularly in relation to ensuring that courses remain sufficiently rigorous for students seeking accommodations while upholding the institution's image of rigour. Though unprompted, some participants qualified their responses regarding how specific accommodations are selected by noting that accommodations should not be perceived to provide an unfair advantage. They explained that such advantages might include providing disabled students with more assistance and support than their peers or undermining a course learning outcome. As stated by P1:

> "[We are] making sure that we're guaranteeing access, but we're not guaranteeing necessarily success. We want to allow students to kind of be able to demonstrate their learning just as any other student would." (P1, Accessibility Advisor)

While participants did not discuss specific instances where certain accommodations were viewed as creating an advantage for one student over others, P4, an academic program coordinator, noted that they were only comfortable supporting informal accommodations if there was no perceived risk of accommodations providing an unfair advantage. This shows the priority of the accessibility office in granting validity to accommodations. They explained that accommodations, such as time extensions, assignment extensions, lecture recordings, and using specific or nonstandard furniture, should be accessed through the formal accommodations process "so that we are not...unintentionally causing inequities in what [we are] doing" (P4, Academic Program Coordinator).

Aligning instructors with goals of access while addressing concerns related to academic rigour presents challenges. Some participants noted skepticism toward accessibility among individuals within the university who viewed it as "a lowering of standards when we accommodate or provide accessibility" (P5, Accessibility Officer). These individuals were concerned that accommodations could mean departing from the university's image as a rigorous academic institution. This perception challenges advocates of accommodations and results in negotiations and compromises between the student, instructor, and accessibility officers. Further, instructors cannot be compelled by the institution to follow the recommendations outlined in accommodation documentation. On the grounds of academic freedom, instructors can refuse to comply with an accommodation request if it is perceived to compromise learning outcomes or any other aspect of a course.

6.3 Competing DEI priorities

In addition to academic rigour, advocates for accessibility also encounter competing interests between accessibility and other DEI concerns — such as striving for gender equality. Race, gender, and disability are often treated as a singular goal rather than distinct priorities. For example, P3, a capital projects manager, recounted a situation in which restrooms were adapted to serve as both accessible and gender-neutral facilities. The institution determined that the solution was the most financially feasible option, which subsequently prompted a conversation among disability and gender-inclusive advocates about meeting the varied needs of students. P7 noted that the prioritization of accessibility and other DEI initiatives in research activities is often influenced by the evaluation criteria for grant applications, which may not prioritize intersectional lived experiences:

> "Accessibility is never really an intersection that's even considered. I'm the one that brings it up as something to consider [...] I find professors usually gravitate to the big three. Race, gender, sexuality. [...] I think when they're thinking from the perspective of who's going to review this grant and what are they going to care more about.

> For example, if the grant is a science grant, they're going to care more about visible minorities and women." (P7, Research Coordinator)

P7 further explained that a similar approach is applied to trainings based on the university's perceived urgency to appear "less white, less rich, and less male," noting that the faculty must achieve a certain percentage of students from diverse racial and cultural backgrounds and genders. In contrast, they noted that accessibility lacks this urgency because of its lack of visibility. The institution's approach to demonstrating compliance is to meet diversity and inclusion quotas, which consequently classifies, homogenizes, and reduces individuals to labels on a checklist.

6.4 Prioritized Maintenance of Course Delivery Technology

Technological breakdowns were a concern for many participants. However, the prioritization of institutional resources often reveals disparities in how accessibility needs are addressed. Participants highlighted that the university prioritizes the maintenance of technologies critical for delivering course content — such as LMS, videoconferencing tools like Zoom, and physical equipment (e.g., laptops, microphones, cameras) — due to their direct connection to instructional delivery. P12 disclosed that repairs for features within critical digital infrastructure, including the university's LMS and overheating laptops, take precedence over other technologies when they affect instructors' capacity to deliver courses. If technical issues with the LMS persist, escalations allow the status of repairs to be tracked and made transparent in formal systems.

Conversely, technologies that indirectly support accessibility work often lack similar formal procedures and resource allocation. For example, breakdowns of departmental websites used to share accessibility-related information were particularly problematic. These websites were used for record-keeping purposes by departments or offices and to disseminate information to community members. For example, P11 described the challenges in maintaining their department website after an institution-wide update:

> "Our website has been modified, you know, because they upgraded Drupal [...] we don't have the people to do it, we don't have the support, we don't have the finances or any of that to actually do the updates on the website in the way that it should be." (P11, Educational Developer)

The disparity in maintenance priorities reflects broader institutional values, where resources are concentrated on systems that directly impact instructional delivery, often at the expense of technologies that support broader accessibility work. Beyond individual systems and tools, participants noted that knowledge retention is essential for sustaining accessibility work across the university. Having communicable documents that record information about accessibility is particularly important due to the university's siloed nature across different departments.

7 Fragmentation & Collaboration Across Institutional Silos

Accessibility work at the university is significantly hampered by siloed organizational structures, inconsistent policies, and incompatible technologies. Participants emphasized that accessibility efforts frequently rely on informal networks and ad hoc collaborations to address gaps resulting from fragmented systems. However, these networks are fragile and susceptible to disruptions caused by high turnover of staff, technological breakdowns, and uneven access to resources.

7.1 Silos & Technology Disparities

The end of the COVID-19 lockdowns and the transition to in-person and hybrid settings exposed long-standing infrastructural gaps. Departments adapted to the "new normal" with varying priorities, resulting in fragmented approaches to accessibility. Participants observed that rapid staff

turnover exacerbated these issues, as critical knowledge related to accessibility efforts often departed with leaving employees. P9 noted the difficulty in reaching institutional consensus on "jurisdictional things around language and what services are offered [...] with what budgets," especially given the high turnover, where "lots of folks will be coming in and out."

These challenges were deepened by technological disparities such as differing software permissions and access to digital tools. P11, an educational developer, highlighted that Adobe Acrobat Pro, a key tool to create accessible documents, was not universally available due to inconsistent departmental software policies. This limited access prevented some staff from meeting the same accessibility standards as their colleagues. Similarly, P7, a research coordinator, observed that inconsistent software usage across departments undermined the university's maintenance of consistent web accessibility standards.

Participants suggested that the university's siloed operations not only perpetuate technological disparities, but also shape how accessibility policies are interpreted and prioritized. Silos influence teams to have different interpretations of, and capacities to fulfil, accessibility policies, further fragmenting practices, procedures, and attitudes. Consequently, departments and faculty allocated resources to accessibility based on their own set priorities, leading to significant variation.

7.2 Networks of Support: Bridging Gaps Informally

At the university, solutions to many of the accessibility-related challenges do not exist a priori but often emerge from networks of support, which depend on both formal and informal collaborations mediated by technology. Although these collaborations mitigate infrastructural barriers to accessibility work, they are disrupted by network instability caused by institutional memory loss due to high turnovers and technological disruptions.

Formal collaborations at the university are documented through institutional websites, annual performance reports, student guides, social media posts, and email communications. Such documented collaborations, operating within official channels, act as a record of legal compliance and as a repository of institutional memory. P1 articulated the importance of preserving institutional memory for annual reports, as well as "internal context within a faculty, just to make sure that there is that translation from advisor to advisor, or when someone leaves the operation."

For instance, the university mediates the process of determining accommodations through formal channels across accessibility support services, healthcare providers, student services, and faculty members. Students submit an intake form and upload medical documentation from their healthcare providers through an online web-based registration portal. Students use the same portal to access accommodation requests, which accessibility services manage. They retrieve their accommodation letters and manually email them to their professors. These channels ensure clear documentation, structured workflows, and accountability, but can sometimes be restrictive when immediate action is required.

In contrast, participants use informal collaboration to operate discreetly and remain invisible to the university administration without formal documentation. Accessibility workers use conversational channels, such as direct emails, instant messaging platforms like Microsoft Teams, and video meetings on Zoom because they enable quick and flexible communication. P1 elaborated on how these informal channels facilitate interim accommodations for students who are still waiting for formal documentation:

> "If a student kind of is in the process of securing documentation, we can get some interim accommodations in place kind of in the meantime. We can kind of connect with professors and let them know like, we're not formally registered yet, but like based

> on a conversation with a student, we're recommending like an accommodation in the meantime." (P1, Accessibility Advisor)

Similarly, many participants highlighted the value of student groups as collaborators, noting that these groups often catalyze accessibility projects due to their deep understanding of community needs. Informal exchanges between accessibility workers are typically off-record, occurring rapidly and outside formal bureaucratic constraints, allowing for quicker responses and more tailored solutions when formal channels are unable to provide timely support.

Accessibility workers also actively collaborate with equity-focused colleagues as part of broader intersectional efforts. They emphasize cooperation between disability, race, culture, sexuality, and gender-based groups. P5, P6, and P11 mentioned collaborative efforts for complaint intake when instances of disability-related discrimination intersect with other forms of discrimination. Most participants shared that these collaborations occur through informal conversations and are often undocumented. Working alongside other DEI professionals, accessibility workers treat diversity, gender, and disability as distinct yet interconnected issues by mediating between different offices.

These informal collaborations manifest as invisible threads connecting disparate accessibility-related endeavours across the university. Further, these unrecorded exchanges act as conduits for disseminating accessibility knowledge. For example, P9 referred to themselves as a "hub that connects folks" to broader accessibility conversations and stated that this was an example of "invisible work" they do that is not documented. Thus, informal collaborations not only provide tailored solutions but also reinforce knowledge retention strategies by fostering direct and flexible collaboration.

7.3 Institutional Memory Loss & Knowledge Retention

Staff turnover — for example, a role change or retirement — not only disrupts the networks that underpin accessibility work, but also interrupts the continuity of efforts due to institutional memory loss. Organizational actors often possess "a wealth of institutional knowledge" that makes them key collaborators. Participants acknowledged their dependence on other staff with tacit knowledge to navigate fragmented systems, noting that without them "there would certainly be a gap" (P11, Educational Developer). Similarly, P9 expressed the challenges that emerged from turnover in advocacy groups and accessibility-related communities of practice:

> "It's that I try to do these kinds of connections, right, and connect people. But beyond that, there are some communities of practice. [...] There are lots of different groups but because it's so big, it's always tricky, right? I have no solution to that one. We've had accessibility-focused communities of practice and groups and working groups, you name it. I've been on like, over the years, on many, many of these. They'll emerge and disappear." (P9, Educational Developer)

The COVID-19 pandemic further exacerbated these challenges, leading to organizational restructuring and an increase in long-term staff turnover. P9 described the challenge as "a continuous sort of like rebuilding, right, and maintaining of these relationships... It's a big time suck." (P9, Educational Developer)

Several participants emphasized that the end of temporary pandemic-related work arrangements resulted in the re-emergence of previously existing gaps. In contrast, the university anticipates the exit of sessional instructors and teaching assistants, prompting the implementation of robust knowledge management strategies and technological solutions. Participants shared strategies to mitigate these disruptions. For example, procedural documentation, video tutorials, and online user guides were created to familiarize new hires with workflows and systems. P12 detailed extensive efforts to standardize training resources for tools such as the LMS and Zoom, ensuring consistent

use and reducing reliance on individual knowledge holders. However, the success of these measures depends on sustained investment in knowledge management and resource sharing.

8 Continuity of Knowledge: Balancing Formal Systems & Informal Practices

In response to the risks of institutional memory loss and network instability caused by technology and staff turnover, participants attempted to preserve accessibility-related knowledge over time. Furthermore, based on interviews, there is a clear focus on using training and instructional programs to facilitate the continuity of knowledge. We found that accessibility workers rely on the interplay between static knowledge — formalized policies, legislative mandates, and standardized procedures — and dynamic knowledge, which develops through informal practices, real-time problem-solving, and responses to evolving discourses around disability.

8.1 Static Knowledge: Baseline Accessibility

Our interviews highlighted the importance of stable and static knowledge in promoting consistency throughout the university and ensuring compliance with legal standards. We describe static knowledge in accessibility work as laws, legislation, and university policies and guidelines. For example, P1 observed that the pandemic prompted more students to request remote learning accommodations, leading the Ministry of Education to change its policies, which reflect the changing understanding of disability in the context of COVID-19. These policy changes, in turn, influence how accommodations have been determined by the university.

Static knowledge helps align accessibility practices across siloed departments and provides a baseline to meet legal and institutional obligations. The stable property inherent in static knowledge also helps mitigate issues of high turnover rates. Multiple participants mentioned they were either considering or developing strategies to codify university accessibility practices and promote consistency across siloed departments. For instance, P5 shared that equity services contemplated developing modular training around ableism and language in all university departments. Similarly, P3 expressed interest in a guideline that could standardize the language of policies surrounding access and inclusion in built spaces:

> "Policies are all siloed. [...] it would be great if there would be some kind of overarching document [...] clarification that [the university is] not going to discriminate people based on, you know, religion, sex, or, you know, disability." (P3, Capital Projects Manager)

Initiatives like UDL illustrate the potential of static frameworks to address systemic barriers proactively. These frameworks not only codify accessibility principles but also offer a starting point for dynamic adaptations.

8.2 Dynamic Knowledge: Adapting to Evolving Needs

Dynamic knowledge complements static knowledge by addressing the fluid and relational aspects of accessibility work. Unlike static knowledge, dynamic knowledge evolves in response to shifting discourses, technological advancements, events, organizational changes, and lived experiences of disability. Participants described how informal exchanges, email records, and collaborative discussions often become the primary mechanisms for disseminating dynamic knowledge.

Ongoing discussions around the rights, needs, and representation of disability can lead to shifting priorities. P5 explained that adapting to the evolving climate of social change can be difficult for different offices and departments with varying "appetites for change" and attitudes about disability (P5, Accessibility Officer). Generally, dynamic knowledge is informally documented across disparate digital communication platforms due to the evolving nature surrounding disability

advocacy. Similarly, P6 disclosed that some departments and units were "well advanced and on their way in their journey," while others were in a stage where "more attention is needed to understand the community" and their respective needs (P6, Equity Officer). In sharing dynamic knowledge, email exchanges serve as an internal means of record-keeping, and consultations are held on messaging platforms such as Microsoft Teams.

Informal networks bridge the gaps between static policies and real-time needs, ensuring that accessibility practices remain responsive. Many participants assumed advisory capacities as opposed to roles that have decision-making authority. As previously mentioned, they mediate between various stakeholders to shape the experiences of those seeking accessibility support and, in the process, create dynamic forms of knowledge that proactively evolve with a growing understanding of accessibility.

However, the transient nature of dynamic knowledge creates ongoing challenges. As P2 observed, rapidly evolving disability discourses can outpace documentation, leaving formal systems outdated. To address this, the participants emphasized the importance of embedding dynamic knowledge into training programs and educational programming, enabling broader dissemination and ongoing adaptation. This helps accessibility workers routinely share dynamic knowledge with the university community and provide new employees with access to established static knowledge.

8.3 Trainings as Strategy: Bridging Knowledge & Networks

Trainings serve as a bridge between static and dynamic knowledge, offering opportunities to standardize practices while remaining adaptive to evolving discourses. Formal mandated trainings align different approaches to accessibility across the university and establish a baseline understanding of accessibility obligations, ensuring legal compliance across the university [24, 44]. Yet, through optional trainings, accessibility workers can strengthen their network through collaboration and share new ideas by disseminating dynamic knowledge.

Participants develop informational resources and educational training to address challenges related to varying attitudes toward disability, ensuring that new accessibility workers are adequately informed and that employees have access to up-to-date knowledge. Training involves strategies on how to successfully accommodate disabled students, using UDL to preemptively alleviate barriers, and improving specific job processes (e.g., creating digital documents) to enhance baseline accessibility.

The formal trainings mentioned were the legally mandated AODA training all university employees must take, and the Teaching Assistant (TA) training program. These trainings are essential to align university employees with official AODA-mandated accessibility policies. They also represent the minimum level of accessibility knowledge required by instructors and TAs.

The components of these trainings are offered online or in person and in synchronous or asynchronous formats. Having flexibility in the mode of content delivery is key, as different topics and target audiences may warrant distinct approaches. As one participant explained, in-person sessions are preferred for certain topics, such as a UDL assessment workshop, as they facilitate in-depth discussions involving participants' own assessments. Due to the large number of required participants, the mandated AODA training is delivered through an online module, which remains continuously available. As P5 described, "over the past few years, tens of thousands of people have taken [the AODA training]." Given the small size of this office, training at this scale would be impossible without online modules. TA trainings are also offered in both in-person and online synchronous formats. Several participants shared that they have created permanent recorded modules to use as informational resources. Due to the rapid turnover of employees at the university, accessibility learning modules help buffer against staffing shortages. Online training modules are thus invaluable tools that augment the capacities of the participants working in accessibility roles.

8.3.1 Trainings & Networks. As detailed in Section 7.2, building and maintaining networks are key aspects of university accessibility work. Training is a vital tool for employees working in accessibility because it enables them to engage with a variety of stakeholders, share knowledge, and advocate for more accessible practices [60] within and beyond the classroom. For example, P5 shared how participation in events often facilitated the collaborative development of new strategies to improve accessibility:

> "For instance, I recently collaborated with an unnamed department that had established an equity and accessibility working group. [...] [We] facilitated workshops to help them navigate these complex issues, leading to internal reflection and eventual progress in addressing these challenges." (P5, Accessibility Officer)

For accessibility workers who create and provide new or optional accessibility-related training and programming, their work was rarely done in isolation. Although the roles of the participants have some degree of similarity in their knowledge of accessibility, they all worked in slightly different domains. Due to the overlap in interests between accessibility advocates at the university, meetings, events, and existing programming allow for the exchange of knowledge and experiences and could result in ideas for new programs, initiatives, or trainings. Regarding the backgrounds of the attendees, P9 found the following:

> "Some folks are very much sort of inserted into conversations about accessibility and equity, inclusion. And so, they are already open to engaging in this conversation, open to learning a range of different practices they can integrate." (P9, Educational Developer)

Although optional trainings lack the widespread impact of more formal trainings, they benefit accessibility at the university by facilitating collaborations and knowledge sharing between accessibility workers, thus strengthening their network.

Other trainings resulted from student complaints. P2 mentioned how a specific complaint regarding the improper treatment of an individual instigated a training for the whole department. Beyond direct complaints, many participants emphasized their reliance on feedback from student-facing departments to address issues such as wayfinding, services, and accommodation facilitation. Accessibility workers use feedback mechanisms with students to pinpoint areas of concern and subsequently develop training programs to rectify any identified issues. In a siloed institution, collaborations between accessibility workers are vital in maintaining strong network connections and a cohesive approach to accessibility.

9 Discussion

This study identified the following broad themes that capture the complexity of accessibility work in organizations such as universities. First, the COVID-19 pandemic significantly reshaped accessibility work by accelerating the adoption of remote and hybrid learning modalities. Universal Design for Learning (UDL) emerged as an important framework for establishing baseline accessibility, not only as a set of pedagogical guidelines but as a cultural shift toward proactive and systemic inclusion.

Second, accessibility work involves inherent challenges related to tensions between accessibility and institutional priorities. Accessibility workers actively navigate these tensions through informal practices and negotiations, advocating for a systemic view of accessibility as a core institutional value rather than a competing priority. Despite their efforts, legal ambiguities and uneven enforcement of disability-related policies, such as the AODA, exacerbate these challenges, diminishing the authority of accessibility advocates and creating inconsistencies in practice.

Third, infrastructural barriers continue to hinder accessibility workers' efforts. Siloed organizational structures, incompatible technologies, and fragmented policies impede resource sharing and coordination between departments. Informal networks and articulation work are critical for

bridging these gaps, allowing accessibility workers to respond to immediate needs and maintain continuity despite high staff turnover and technological disruptions.

Fourth, accessibility workers address institutional memory loss and network stability by employing strategies to ensure that accessibility-related knowledge is maintained. These strategies involve the interaction between static and dynamic knowledge. Static knowledge — as codified policies — provides stability and baseline accessibility. In contrast, dynamic knowledge, which emerges through real-time problem solving and evolving discourses on disability, ensures that practices remain adaptable and responsive.

Accessibility workers must account for the complex interplay between university policies and procedures, institutional priorities, legal compliance, and student needs. They accomplish this by coordinating through informal networks to navigate infrastructural seams and performing articulation work through training. This paper thus adds to HCI/CSCW research on the tensions between formal and informal work [21, 85], standardization and flexibility [17, 41, 61, 85], and design in the pursuit of equitable access and participation [4, 47, 49, 62, 82, 84].

Our findings also align with recent HCI research on accessibility that uses the lens of interdependence to emphasize accessibility as a collective responsibility rather than the sole burden of people with disabilities or accessibility advocates [10, 58]. Through this lens, interdependence recognizes the value of articulation labour, such as the relationship-building and informal coordination we observed, as a shared endeavour [10, 97].

In the following discussion, we examine the invisibility of accessibility work and show how digital technologies mediate informal collaborations to address gaps in formal systems. The concept of "seams" is used to describe the gaps and mismatches in infrastructures — legal, academic, and technical — that workers have to navigate. We propose seamful design [20] to expose and work with these seams and argue that training is already an instance of accessibility workers engaging in seamful design. We suggest ways to support accessibility work by balancing flexibility and standardization, and the roles technologies can play as boundary objects.

9.1 Invisibility and Informal Collaborations

In line with Star and Strauss's [89] examination of the interplay between formal and informal work, our study reveals that accessibility work is often invisible in two ways: 1) accessibility work is typically done behind the scenes, and 2) it serves marginalized disabled members of the university and remains unnoticed due to the historical devaluation and lack of recognition of labour within DEI efforts [3, 50, 90, 98].

As described in Section 7.2, informal collaborations manifest as invisible threads connecting disparate accessibility-related endeavours across the university. As researchers, we were confronted by this invisibility from our own experiences as outsiders looking into the university system, particularly during our recruitment process mentioned in Section 4, despite all of us studying and/or being employed by the institution. The COVID-19 pandemic has further amplified the invisibility of accessibility-related labour by dispersing teams remotely, making "offices" no longer physical spaces where visibility or relationship-building occurs. The themes surrounding the labour of relationship-building that emerged from our findings were reflective of this experience; if not for our initial participants, we would have been unable to trace how these threads connected.

From interviews, we observed the behind-the-scenes work of a variety of different organizational actors. Digital technologies were integral to this — accessibility workers unite across disparate departments through digital communication systems, online storage platforms, and online or hybrid meetings. These informal collaborations are critical in addressing the gaps left by formal systems. Interviewees emphasized the importance of speaking with student groups and looking beyond university resources to learn about UDL and barrier-free access. Additionally, because

there is currently no avenue to address intersectional issues, accessibility workers must informally collaborate with other DEI-related offices to jointly address discrimination complaints.

Networks allow participants to coordinate and share insider knowledge to navigate organizational structures and policies. However, tensions emerge at the intersection of overlapping infrastructures, emphasizing the importance of examining the relational dynamics that participants experience while engaging in collective access work.

9.2 Infrastructural Seams: Determining Individual Accommodations

Accessibility work occurs within and across intersecting infrastructures where the convergence of "mishmashing" policies, laws, and workflows creates complex and often conflicting conditions. Accessibility workers navigate infrastructures through digital technologies, which become visible at these seams [96], particularly when breakdowns occur [87]. The analytical framework of “seams” [96] aids in examining overlapping infrastructures and the articulation work that actors carry out to negotiate the differences and incompatibilities that emerge. The framework of "seams" allows us to recognize that overlaps and gaps create opportunities for coordination and flexibility in accessibility practices.

For example, seams at the intersection of legal and academic infrastructures demonstrate challenges in achieving barrier-free access and participation when academic rigour conflicts with or is prioritized over the needs of people with disabilities. Accessibility workers must attend to the tensions that occur between student needs, legal obligations, and academic expectations of learning outcomes and academic rigour. When tensions surface, the legal infrastructure is more flexible than the academic infrastructure. The AODA and Human Rights Code provide some guidelines [63], but mandate universities to make “reasonable efforts” to accommodate students, giving the university significant latitude in determining appropriate accommodations [94]. In comparison, participants noted that the academic infrastructure is much more rigid. Learning outcomes are standardized for all students and appear immutable once a course is active; no participants mentioned making pedagogical changes in response to individual accommodation requests.

This has important implications for how accessibility should be approached in universities. Although legal frameworks establish a baseline for inclusion, they are insufficient when faced with inflexible academic structures. As a network, participants artfully navigate across seams to carry out accessibility work by leveraging informal collaborations and trainings. They coordinate through various informal channels, where most of their work is invisible while achieving greater flexibility than formal processes allow.

To better support accessibility work in universities, we argue that designers must be able to support these practices through "seamful design" [20] — deliberately exposing existing seams, i.e., mismatches or inconsistencies inherent in complex systems — making them visible to allow users to adapt or exploit them to their advantage. Rather than smoothing over seams or hiding inconsistencies, this approach supports the articulation work accessibility workers undertake in understanding and navigating these mismatches.

Seamful design aligns with the dynamic and relational nature of disability [10, 40, 94], which stresses that accessibility is not a fixed state but rather an evolving process requiring continuous adjustments [10, 39, 92]. Importantly, there is no perfectly seamless system. For disabled individuals and accessibility workers, seamful design provides a means of confronting and navigating these inevitable gaps, reducing the burden of devising workarounds while empowering users to leverage seams proactively.

9.2.1 Breakdowns, Maintenance & Repair. Beyond points of tension that surface at seams, infrastructures and the seams between them also become visible when breakdowns occur [87]. Misalignments

or incompatibilities between infrastructures can create breakdowns at the seams [31, 99], such as when overheating institutionally provided laptops cannot facilitate course instruction or when content management systems (e.g., Drupal) are upgraded without adequate resourcing and support, leaving accessibility-related websites with out-of-date information.

Due to decentralized workflows, the university's vast scale can make accessibility-related work across departments invisible. This issue was apparent during difficulties in our interviewee recruitment process. The work of those we interviewed is largely done behind the scenes or not explicitly documented. Much of the collaboration that occurs within the domain of accessibility tends to be informal, leading to a lack of awareness beyond those involved. As such, silos contribute to both the disconnection of accessibility-related practices and the different motivations to approach accommodations.

Through the lens of maintenance and repair, we are interested in understanding how the university addresses and manages breakdowns. Technologies that facilitate educational instruction are prioritized according to the policies governing the delivery of educational services. For example, formal protocols and procedures guarantee the operational status of the university's Learning Management Systems (LMS), streaming laptops, and library websites. When these technologies malfunction, resulting in service outages during classes, procedures require formal documentation of incidents. Such disruptions make apparent the infrastructure that underpins students' learning experiences.

In contrast, the institution overlooks the maintenance of digital systems and software that involve accessibility initiatives, such as access to software that creates accessible documents or development support for webpages after system upgrades, rendering staff incapable of maintaining them. In contrast to disruptions that occur within classrooms, these issues play out behind the scenes and are only visible to relevant staff and faculty. The institution demonstrates how it prioritizes and standardizes the visibility of disruptions and acts of maintenance by focusing on technologies that affect all students, while deprioritizing those impacting disabled students or accessibility-related workflows. Breakdowns that impede general educational delivery are addressed with urgency, whereas those that disproportionately affect single disabled students — or even many disabled students spread throughout the university — receive far less institutional attention.

As argued by disability scholarship [29], this prioritization places undue responsibility on disabled individuals and accessibility workers to repair gaps and mismatches in under-supported systems. Disabled students and advocates often face the additional burden of identifying, reporting, and working around these infrastructural failures, perpetuating inequities. Shifting some of the labour of repair onto the systems themselves would reduce this disproportionate burden. In particular, in instances where repair and maintenance of certain technologies and infrastructure are not prioritized, seamful design can give accessibility workers (especially new ones) greater awareness of how these systems work and allow users to be aware of potential mismatches that they can address, circumvent, or avoid before they escalate into failures.

9.3 Trainings as an Example of Seamful Design

The reality of accessibility work means that our participants are already enacting forms of "seamful design." A key example of this is how they use trainings, both mandatory and optional, to transfer and share knowledge, practices, and understandings surrounding accessibility, disability, and accommodations across infrastructural seams. While much of our participants' work experience was siloed, trainings acted as a bridge.

Accessibility-related trainings offered across the university are often organized collaboratively, involving individuals from different departments or faculties. Creating and delivering such trainings acts as a form of articulation work and allows for "the meshing of efforts of various unit-workers"

[91]. The collaborative nature of these trainings reflects their inherent seamful design: trainings make seams more visible by revealing and acknowledging the gaps, mismatches, and inconsistencies in policies, technologies, and workflows across departments and practices.

Trainings also make visible the often-invisible labour of accessibility workers. By bringing together individuals from across the university, these sessions make visible the articulation work required to address the gaps left by rigid institutional structures. Trainings, thus, exemplify how accessibility workers attempt to codify and bring consistency to disparate practices at the university; instead of hiding, ignoring, or smoothing over the seams, trainings acknowledge these divisions and use them as opportunities for collaboration and adaptation.

Through seamful design approaches, designers can help reduce this burden by recognizing accessibility-related labour and supporting informal collaborations without compromising their flexibility, and by fostering mechanisms that make these contributions valued.

9.4 Design Implications: Balancing Flexibility with Standardization

Throughout this paper, we have discussed various ways accessibility workers in universities adapt to both rigidly formalized infrastructures and informal networks of collaboration to successfully provide accessibility services to students. Designers must then consider ways of accommodating both flexibility and standardization in tools and systems created to support accessibility work in higher education; however, balancing the two requires nuance.

Standardization of organizational practices through articulation work can be at odds with the flexibility required to meet the needs of disabled individuals. Documents, written policies, and collaboration between individuals standardize practices but also constrain flexibility for other efforts. Within large distributed systems, standards are necessary to ensure common understandings and facilitate communication [41]; participants sought UDL as a key form of standardization to use in their work. However, flexibility is also required for a distributed system to work effectively [17] as not all organizational work can be formalized, and prior organizational research [85] has argued for design to support informality.

Further, maintenance and repair practices have often been integral to the disabled experience [83], as individuals and communities attempt to navigate routine infrastructural breakdowns [48]. For example, participants in our study frequently addressed behind-the-scenes breakdowns, such as incompatibilities between document conversion software and institutional systems. Existing HCI research on accessibility in higher education has focused on student-facing services [8, 28, 29, 77], but designers need to also focus on non-student-facing infrastructural breakdowns and support accessibility work by building collective resilience and recovery mechanisms.

As we have described, accessibility work at the university is constituted of constellations of formal and informal work. Design supporting accessibility work will need to:

- through seamful design, reveal infrastructural seams and support stakeholders in navigating them,
- support articulation work and foster both formal and informal collaborations,
- facilitate interdependence as collective resilience to address breakdowns, and
- understand the diverse and dynamic lived experience of disabilities.

We propose leveraging boundary objects — either artifacts or systems — that can span across diverse roles and contexts while maintaining shared meaning. Boundary objects provide a framework for aligning standardized compliance with the dynamic needs of users, offering enough interpretive flexibility to adapt to different stakeholder requirements.

It is important for designers to assess the benefits of making behind-the-scenes work visible [21]. On the one hand, it acknowledges the importance of accessibility work, fosters collaboration,

and aids resource allocation. On the other hand, it might lead to a loss of autonomy by getting entangled in the rigid bureaucratic processes that are inherent to large organizations. Doing so would mean holding onto the balance between standardization and flexibility, which in the context of the university, speaks to the interplay between formal and informal work, and static and dynamic knowledge, respectively.

However, shifting trends and discourses around disability and accommodations also require adjustments to how participants work with both students and other staff members. One way to reconcile these potentially competing interests is to be "firm on principles but flexible on methods," as noted by Cabitza and Simone [17]. They suggest that the most direct way to introduce or ensure flexibility in a system is to allow for deviation from standard processes. A flexible form of exception handling comes from Mourão and Antunes [61], who suggest that exceptions should be handled in a highly collaborative and non-prescriptive manner.

9.4.1 Technologies as Boundary Objects. Technologies, such as LMS, serve as boundary objects by enabling diverse stakeholders to collaborate dynamically while maintaining static compliance with laws and policies. As technologies critical for delivering course content, they further receive priority on institutional resources and are actively supported by the university.

These systems need to be designed to support flexibility while grounding them in more standardized frameworks around accessibility. For example, concerning accommodations, an LMS could integrate features like real-time accommodation adjustments that, while compliant with institutional policies, allow instructors to work with students to adjust deadlines or provide alternative formats. Such features not only ease the burden on accessibility workers but also encourage instructors and students to collaborate more effectively. Importantly, as boundary objects, these technologies can accommodate different interpretations across roles such as students, instructors, and accessibility workers while providing a shared artifact or system for interaction. For example, an LMS might facilitate standardized practices for uploading accessible course content while allowing accessibility advisors and individual instructors to customize student accommodations dynamically based on changing student needs and course needs.

Designing systems with the capacity for standardization and flexibility is essential for balancing compliance with evolving accessibility requirements. Further, by using seamful design and making infrastructural seams visible, technologies like LMS can enable users to identify and address mismatches proactively, reducing the (invisible) labour disproportionately borne by accessibility workers and people with disabilities.

By embedding accessibility guidelines and policies into the design of a system (e.g., UDL principles), designers can shift accessibility work from a reactive afterthought to a proactive, systemic approach. This can further help normalize accessibility work as a shared (interdependent) responsibility across the organization.

9.5 The Big Picture: Role of the University

Examining ways in which post-secondary institutions such as universities address issues of accessibility demonstrates how they regard access and the role of disabled people in the institution. The implementation and management of accessibility work falls on university staff, who must navigate the competing demands of university culture, academic norms, faculty expectations, student needs, and legal compliance. Accessibility policies and processes are focused on promoting accommodations for students, as long as they do not compromise academic rigour, and offering basic AODA training for staff members. These activities are shaped by the customer service standards in the AODA and the broader neoliberal treatment of students as the customers of education [36, 79].

The university's primary focus is to ensure that its customers, i.e., students, can access its services, namely education.

Ultimately, as we describe, the experiences of disabled people at the university are rarely improved solely by policies or top-down initiatives. Instead, meaningful inclusion is often driven by the unseen and underappreciated labour of accessibility workers who — despite challenges — bridge infrastructural seams, advocate for change, and foster a culture of interdependence. Their efforts highlight the need for systemic recognition and support for accessibility work, moving beyond compliance-based approaches to embrace proactive and collective responsibility for inclusion across all of university life.

10 Conclusion

This paper investigates the nature of accessibility work in a large research university in Ontario, Canada, and how it is shaped by socio-technical, organizational, and legal factors. Through interviews with university employees, we find that accessibility work relies on embedded technologies and the interdependent efforts of workers who provide accommodations.

We show that providing accommodations requires employees to navigate conflicting legal and institutional infrastructures. The COVID-19 pandemic has further emphasized the challenges of this work, as shifts to — and from — online learning call attention to emerging accessibility challenges. Accessibility workers use formal and informal collaborations to bridge siloed departments, with accessibility trainings serving as a key form of articulation work — making infrastructural seams visible, aligning practices, and educating attendees.

We suggest designers use seamful design as a way of supporting accessibility work, as it aligns with the dynamic and relational nature of disability that inevitably encounters gaps. Further, they must seek to foster interdependence to support workers as they face overlapping infrastructures and infrastructure breakdowns. In doing so, we hope we can shift the invisible labour from accessibility workers to the systems themselves.

Future studies should include student and instructor perspectives on navigating seamful spaces and balancing accessibility with competing priorities like academic freedom. Understanding these perspectives would enrich accessibility frameworks, provide more nuanced support to accessibility workers, and further support efforts to improve accessibility.

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