Justice Institute
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Breaking Down Barriers: Exploring Challenges in the Creation of Accessible Documents within Educational Programs

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The Justice Institute of British Columbia respectfully acknowledges the Traditional, unceded and Treaty Territories of the First Peoples where its campuses are situated.

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Disclaimer: The views expressed are those of the authors and do not necessarily reflect those of the funders or of the Justice Institute of British Columbia (JIBC). Recommendations found in this research are based on the document analysis of existing documents and informed by the literature reviewed within this. This report does not in any way intend to misalign software companies but only suggest creative ways for course developments in the absence of purely Accessible tools.

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Executive Summary

Introduction

According to the 2022 *Canadian Survey on Disability*, approximately 27% of Canadians have one or more disabilities (Statistics Canada, 2024). This research project identifies barriers instructors experience when creating accessible learning materials for students in higher education. The study consists of two parts: first, a literature review exploring the challenges that limit an instructor's ability to create accessible resources, and second, a document analysis of six online courses that provide a snapshot of the accessibility landscape at the Justice Institute of British Columbia (JIBC).

Literature Review

The literature reveals three main themes, which reflect individual, institutional, and systemic challenges that limit the accessibility of learning materials.

Professional Development

Professional development (PD) is crucial in equipping instructors with the knowledge and skills to create accessible online learning resources. Instructors often lack training in accessibility before they begin teaching, which means they must learn on the job. There are many different types of PD that are required to help instructors create accessible content.

Lack of Resources

There is also a general lack of resources, including time and institutional guidance. Even instructors who are passionate about accessibility feel overwhelmed with the additional workload, and many institutions do not have a clear policy on who is responsible for ensuring digital content is accessible.

Knowledge Gap About Disabilities

Several studies provided examples of instructors who believed they had never taught a student with a disability before or that students rarely have problems with their course (Phelps, 2023; Singleton et al., 2019; Lowenthal & Lomellini, 2023; Coverdale, 2024). As a result, content is often adapted to meet accessibility needs on a reactive basis, even though a proactive approach to course design is cheaper and faster. A reliance on reactive course development also puts the burden on students to request accommodations, but studies show students have various reasons for not disclosing their disability to their instructor (Hansen & Dawson, 2020; Lowenthal & Lomellini, 2023; Briggs et al., 2024).

Method and Analysis

The research was conducted in two phases, each informing the report's final recommendations. First, researchers conducted a literature review, which highlighted gaps that stem from a general lack of understanding of disabilities, limitations with technology and the need for PD to help content creators understand accessibility and create accessible online learning materials.

Next, based on recommendations from literature review, we created 8-Step Accessibility Checklist, that was adapted and developed using the BCcampus' Accessibility Toolkit – 2nd Edition (Coolidge, et al., 2018). The document analysis provided a snapshot of accessibility at JIBC. In total, 200 documents from six courses were compared using an 8-Step Accessibility Checklist. Researchers manually counted every instance when a resource did not meet an accessibility criterion.

Finally, 136 resources were uploaded to Blackboard Ally (Ally) to receive an accessibility score ranging from Low to Perfect. The accessibility scores are based on the number and severity of issues identified in each file – such as images have a description, is there a hierarchical structure to the document using headers and more. A lower score indicates significant or multiple accessibility barriers, while a higher score reflects minor or no issues. For any content that does not achieve a perfect score, Ally provides targeted recommendations to help improve its accessibility.

Results

The results of the study found three major concerns. Using the 8-Step Accessibility Checklist, researchers identified alternative text (alt text) as the primary issue, with 789 instances of missing or inadequate alt text. Alt text is a written description of an image, used by screen readers to help people with visual impairments understand visual content.

The second most common issue was lack of accommodation instructions or alternate formats for assignments.

Other top concerns related to Blackboard Ally scores included, inconclusive results for some third-party software and that the accessibility of a Word or PowerPoint file directly impacts the accessibility of a PDF.

Discussion

After comparing results from both the literature review and the document analysis, researchers identified four points of discussion. First, it's important to recognize and work within technology limitations. Some common authoring tools, like Blackboard Editor and Rise 360, contain inaccessible course development features highlighting the need for content creators to be aware of individual software limitations and find creative ways to support students with disabilities. Second, undertake the issue pertaining to lack of accommodation instructions or alternate formats for assignments. Instructors incorporate this knowledge to build a proactive approach to building alternate assessment methods for students needing accommodation. Within the institute, instructors partner with disability services to provide accommodation and work with instructional designers and developers to find creative ways to include an alternative accessible version. Third, content creators should leverage technology, by using in-built accessibility features, such as the Check Accessibility in Microsoft Word or automatic close captions in Kaltura. These features offer a starting point, although this should not be the only effort put into accessibility. Fourth, researchers concluded that it is essential for instructors to receive various types of PD to help support their efforts to create accessible learning materials.

Conclusion

Researchers concluded that ensuring instructors receive various types of PD to help support their efforts to create accessible learning materials is essential. Sessions should focus on the limitations and benefits of software as well as why accessibility is so important.

Introduction

Providing accessible education environments is essential to ensure all students are provided equal opportunity to succeed, regardless of their physical, cognitive, or sensory abilities. In Canada, accessibility in higher education aligns with national commitments to inclusivity and equal access. According to the 2022 Canadian Survey on Disability, approximately 8 million people—or 27% of Canadians—have one or more disabilities, an increase from 22% in 2017 (Statistics Canada, 2022). In response to this growing need, the Canadian government introduced the *Accessible Canada Act in 2019* (S.C. 2019, c. 10), aiming to create a barrier-free country by 2040. Additionally, eight out of ten provinces have implemented their own accessibility legislation. British Columbia, for example, enacted the *Accessible British Columbia Act in 2021* (SBC 2021, c 19), requiring higher education institutions to meet accessibility standards within one to two years. These legislative frameworks underscore the importance of digital accessibility, particularly as online learning continues to expand in post-secondary education.

At JIBC, advancing Equity, Diversity, and Inclusion (EDI) is a strategic priority. JIBC offers certificate, diploma, and degree programs in fields such as law enforcement, emergency and security management, firefighting, paramedicine, conflict resolution, and intelligence analysis. As a public safety and justice institution, JIBC is committed to ensuring all students have equitable access to learning resources.

This research explores the barriers instructors face when creating accessible digital learning materials and assesses the current state of digital accessibility at JIBC. The study consists of two components: a literature review identifying common challenges instructors encounter and a document analysis evaluating accessibility within JIBC's online learning resources.

By examining these factors, the research aims to inform institutional strategies that support instructors in designing more accessible content. Potential initiatives include targeted training on how to create accessible content, increased awareness about disabilities, and enhanced use of accessible technologies. Ultimately, this study contributes to JIBC's efforts to foster an inclusive learning environment while aligning with provincial and federal accessibility mandates.

Literature Review

Research for the literature review was conducted using the JIBC Library's access to Education Resources Information Center (ERIC), Academic Search Complete, Teacher Reference Center, and public searches on Google Scholar. These databases were selected for their comprehensive coverage of education-related research and relevance to the topic of accessibility in postsecondary education.

The search was conducted between September and November 2024 using keywords such as "higher education," "instructors," "lecturers," "professors," "accessibility," accessible," "learning materials," "learning management system," "LMS," "PDF," with Boolean operators to refine results. The most successful searches were in the ERIC database: (SU: Accessibility) AND ("learning management system" OR LMS), which resulted in n=17 results; (SU: Accessibility) AND (Learning Materials) with n=21 results, and Google Scholar natural language search "Identifying barriers faced by higher education instructors when creating accessible learning materials".

The search followed specific inclusion and exclusion criteria:

- **Inclusion Criteria**:
    - Articles focused on postsecondary instructor's ability or challenges in creating accessible environments for students.
    - Research conducted in Canada, the United States, or the United Kingdom.
    - Publications in English, published within the last seven years (2017 onward).
- **Exclusion Criteria**:
    - Articles providing accessibility checklists or general definitions of accessibility/Universal Design for Learning (UDL), as these did not address instructor's abilities directly.
    - Studies focusing on student perspectives rather than instructors.
    - Comparative analyses of Learning Management Systems (LMS) or online platforms.

Given the scope of the research, a non-systematic approach was employed. Titles were reviewed using the inclusion and exclusion criteria to identify potentially relevant articles, which then underwent abstract screening. Of the initial 86 articles reviewed, 33 met the criteria and were read in full, with 14 ultimately included in the literature review. Articles were selected based on thematic relevance, methodological rigor, and the depth of evidence provided.

The aim of the literature review was to help identify barriers instructors face that prevent them from creating accessible online courses. After reviewing the literature, three major

barriers were identified, each supported by distinct sub-themes. These barriers reflect individual, institutional, and systemic challenges that hinder accessibility efforts.

Need for Professional Development

The literature emphasizes the critical role of professional development (PD) in equipping instructors with the knowledge and skills to create accessible online learning resources. Several studies emphasized that instructors often lack awareness of accessibility standards and disability requirements, which can hinder their ability to create inclusive learning environments. As a result, PD becomes a crucial tool for bridging this gap and achieving accessibility in online course design (Guilbaud, 2021; LaSala et al., 2020).

According to Briggs et al. (2024), when instructors received training and constructive feedback on how accessible their online courses were, their ability to meet accessibility standards improved significantly. In addition, Hansen and Dawson (2020) observed that when instructors learned about the experiences of students with disabilities, they were more likely to adopt positive attitudes and provide appropriate support. Effective PD can also focus on broader principles, such as Universal Design for Learning (UDL), which stresses that inclusive practices benefit all students, not just those with disabilities (Hsiao et al., 2019).

However, despite the clear benefits of PD, participation rates remain a significant concern (Miller, 2023). There are several factors that might contribute to low PD enrolment, including time constraints, lack of incentives, and the fact that PD may not count towards tenure or promotion (Guilbaud, 2021; Hsiao et al., 2019).

No Accessibility Training Prior to Teaching

A major reason instructors require PD sessions on disabilities and accessibility is because most enter teaching with no formal training in accessibility (Briggs et al., 2024). Most academic degrees do not have embedded accessibility components, leaving instructors with minimal training on accessibility and course design (Cloverdale, 2024; Lowenthal & Lomellini, 2023). In Hansen and Dawson's (2020) study, participants felt unprepared to accommodate students because they were learning on the job how to support students with disabilities.

Types of Professional Development Needed

While each article emphasized the critical role of PD in helping instructors understand accessibility and create accessible online learning environments, they presented different formats and content for PD sessions. Two articles wrote about a "train the trainer" model, where PD participants share their new knowledge on accessibility with other colleagues

(Phelps, 2023; Miller, 2023). This aligns with another barrier, Lack of Resources, by sharing the responsibility of PD sessions.

In contrast, LaSala et al. (2020) and Briggs et al. (2024) focused on hands-on accessibility support, with programs that helped instructors update their online courses to meet accessibility standards. These programs were designed to not only teach accessibility principles, but also offer tangible support in making online courses more accessible.

The topics of PD sessions also varied across the articles. A variety of session topics included: UDL versus digital accessibility (Miller, 2023), learning about individual disabilities (Phelps, 2023; Guilbaud, 2021), accessibility laws, specific tools to support students with disabilities (Guilbaud, 2021), empathy training to better understand the experiences of students with disabilities, insights into how students interact with inaccessible materials, and best practices for creating accessible content (Lowenthal & Lomellini, 2023).

Despite the variety of formats and topics requested for PD, the consensus amongst researchers was that PD was essential for instructors to break down barriers and create accessible online learning environments.

Lack of Resources

The second barrier that emerged was the general lack of resources, whether in the form of time, money, personnel, or institutional policies. Instructors face challenges in designing online courses that meet accessibility guidelines due to limited resources and time constraints (Cooper, 2021; Briggs et al., 2024; Lowenthal & Lomellini, 2023; Singleton et al., 2019).

Lack of Time

Time is the most frequently cited resource constraint that instructors face when developing accessible online courses (Briggs et al., 2024; Mack et al., 2023; Cooper, 2021). Tasks like adding closed captions to videos may increase instructor's workload by an average of 10% (LaSala et al., 2020). Even instructors who are passionate about accessibility often feel overwhelmed and ill-equipped to manage the additional workload (Coombs et al., 2023; Singleton et al., 2019; Phelps, 2023; Mack et al., 2023).

Not only is creating accessible learning materials time intensive, but many instructors lack the time to attend necessary PD sessions. Lowenthal and Lomellini (2023) highlighted that providing PD requires substantial time, resources, and institutional commitment. Therefore, PD opportunities should be flexible and available in alternative formats such as online modules or asynchronous learning opportunities, to accommodate varying teaching schedules (Guilbaud, 2021).

Lack of Institutional Guidance

Many institutions lack clear institutional policies or guidelines on who is responsible for ensuring online learning materials are accessible (Lowenthal & Lomellini, 2023). Researchers consistently emphasized that collaboration between faculty and support staff is essential for effective course design (Briggs et al., 2024; Lowenthal & Lomellini, 2023; LaSala et al., 2020; Mack et al., 2023; Singleton et al., 2019). However, disagreements frequently arise between faculty and instructional designers regarding responsibility, particularly in the absence of institutional policies to clarify roles (Lowenthal & Lomellini, 2023).

Some faculty believe their responsibility lies in their subject expertise and not in ensuring the accessibility of online learning materials (Singleton et al., 2019). In these cases, they may believe that responsibility falls to their academic department, the disability office, teaching and learning centers, or the Information Technology (IT) department (Coverdale, 2024; Guilbaud, 2021; Lowenthal & Lomellini, 2023). This lack of consensus complicates efforts to create accessible courses and highlights the need for clearer institutional direction.

A lack of time, institutional guidance, and other essential resources poses significant barriers to creating accessible online courses, leaving instructors overwhelmed and uncertain about their responsibilities.

Knowledge Gap About Disabilities

The third barrier is a knowledge gap regarding disabilities. Some instructors stated that accessibility training was unnecessary because they believe they have not taught students with disabilities before (Phelps, 2023; Singleton et al., 2019), or that students with disabilities rarely have problems in their courses (Lowenthal & Lomellini, 2023; Coverdale, 2024). Other instructors were concerned about students with disabilities ability to succeed in the “real world” (Hansen and Dawson, 2020) or struggled to recognize the need to accommodate for invisible disabilities, such as dyslexia (Phelps, 2023).

Understanding why accessibility matters is as important as knowing how to implement it (Phelps, 2023). Hsiao et al. (2019) found that learning about the experience of students with disabilities in higher education encouraged instructors to adopt more thoughtful instruction planning.

Reactive vs. Proactive Course Design

Due to a lack of understanding about disabilities, many instructors use a reactive approach to course design, where accessibility is only considered after a student with a formal accommodation enrols in their course (Hsiao et al., 2019; Lowenthal & Lomellini, 2023).

However, reactively adapting course material is time-consuming, inefficient, and adds strain on instructors and institutional support staff (Guilbaud, 2021).

The alternative is using a proactive approach, where accessibility is integrated into the initial course design rather than treated as an afterthought (Guilbaud, 2021). A proactive approach benefits all students, regardless of disability (Singleton et al., 2019). For instance, faculty at one university who included lecture transcripts with pre-recorded lectures found 96% of surveyed students stated it improved their comprehension (LaSala et al., 2020).

Students not Disclosing Disabilities

A reliance on reactive strategies to create accessible course materials also places the burden on students to request accommodations, rather than encouraging faculty to proactively design inclusive content from the start (Cooper, 2021). However, studies show that many students do not disclose their disabilities or accommodation needs, leaving faculty unaware of the necessity for accessible design and students' accessibility needs (Briggs et al., 2024).

There are many reasons students might not disclose a disability, such as a fear of stigma or being judged (Hansen & Dawson, 2020; Lowenthal & Lomellini, 2023). Some instructor's attitudes exacerbate the problem, with the literature including examples of instructors questioning whether students "really need" their accommodation (Mack et al., 2023). Practical barriers also deter students from disclosing accessibility needs, such as the requirement of a formal diagnosis (Briggs et al., 2024). Students who are reluctant to disclose their disability underscores a broader failure to create learning environments that are inherently inclusive, which could reduce the need for individual disclosures.

In summary, a general lack of understanding about disabilities hinders the creation of accessible online environments. When accessibility is built into course content from the start though, it ensures that all students, whether they disclose or not, can successfully engage with course materials.

Literature Review Summary

The literature highlights multiple barriers that higher education instructors face when creating accessible online learning resources, centering on the critical role of PD, an overall lack of resources, and a gap in knowledge about disabilities.

Methods and Analysis

Researchers conducted a document analysis of six online courses at JIBC to determine how many accessibility issues each course had.

The goal of the document analysis was to gain an understanding of the accessibility landscape at JIBC in 2024. Once a baseline was established, researchers could use the findings from the literature review and the understanding of JIBC's current landscape to create a plan for increasing the accessibility of online content. The document analysis will be repeated in a few years to determine if the accessibility of the six online courses at JIBC has increased.

Course Selection

In total, six courses across three programs were analyzed. Programs self-nominated to be included in the document analysis.

The six courses that were analyzed were built between 2020-2024. This period saw courses either quickly pivoting to online learning during the start of the COVID-19 pandemic or adapting to a new blended learning format when in-person classes resumed. Courses created in 2020-2023 were built on the Blackboard Original platform and courses created in 2024 were built on the Blackboard Ultra platform. Since the creation of each course, no significant edits or changes were made.

Blackboard Learn (Original) and Blackboard Ultra differ significantly in terms of accessibility. Blackboard Ultra offers a more modern, streamlined, and responsive interface designed with accessibility in mind from the start. It provides improved keyboard navigation, better screen reader support, and consistent use of semantic HTML and ARIA landmarks, making it easier for users with disabilities to navigate. In contrast, Blackboard Learn (Original) relies more heavily on custom layouts and older web technologies, which can lead to inconsistent accessibility experiences. Overall, Ultra delivers a more accessible and user-friendly environment, aligning better with current accessibility standards and best practices.

Each course contained a variety of different resources, including syllabi, course materials, PowerPoint presentations, templates, checklists, instructional guides, and assessments. Resource formats also varied, including Blackboard Editor, DOCX files, PDFs, Rise 360 (Rise) courses, and Articulate Storyline (Storyline) courses. Researchers analyzed all resources created by JIBC staff or instructors to assess if it met accessibility standards that

support all users. See Table 1 for a breakdown of each course and the associated resource types.

Table 1

Resource Types by Course

Resource Type	***C.1 (2020)***	***C.2 (2020)***	***C.3 (2022)***	***C.4 (2022)***	***C.5 (2024)***	***C.6 (2024)***
Blackboard Editor	5	16	13	8	9	2
DOCX files	--	--	8	2	--	--
PDFs	5	26	25	28	4	11
Rise 360	2	4	--	2	3 --	2
Storyline	--	--	9	--	--	--
Assessment	4	--	3	6	1	2
Total Resources	16	46	58	46	17	17

Document Analysis

There were two distinct groups of resources during the document analysis:

- *Group 1* - All resources that were not assessments - The first group of resources encompassed all resources that were not assessments, including syllabi, PowerPoints, multimedia, Rise and Storyline courses. In total, 134 documents fall under Group 1.
- *Group 2* – Assessments - The second group of resources were assessments and included Blackboard quizzes and other assignments. In total, 66 assessments were analyzed. These are distinct from the Group 1 resources because Blackboard quizzes could not be run through Blackboard Ally (Ally) to receive an accessibility score.

The document analysis took place in two phases. All documents (Group 1 and Group 2) were first compared to an 8-Step Accessibility Checklist. Researchers manually counted each time a resource did not achieve an accessibility element on the checklist. After this review was complete, the Group 1 resources were uploaded to Ally to receive an accessibility score.

Phase 1 - 8-Step Accessibility Checklist

The first phase of the document analysis compared all 200 resources to an 8-Step Accessibility Checklist. The checklist was developed using the widely used *BCcampus'*

Accessibility Toolkit – 2nd Edition (Coolidge, et al., 2018), which outlines key criteria for evaluating the accessibility of educational documents. Researchers manually counted every instance where a resource did not meet an accessibility criterion. See Table 2 for a summary of the 8-Step Accessibility Checklist.

The two groups of resources were assessed slightly differently during this phase of the process:

- *Group 1* – 134 resources – were reviewed against Steps 1-7 of the checklist.
- *Group 2* – 66 resources - were reviewed against all 8 Steps on the checklist, as the eighth and final checklist item only pertains to assessments.

Table 2

8-Step Accessibility Checklist (Short Version)

Number	Checklist Item	Description
1	Headings	Counted each instance where a resource lacked clear content hierarchy using proper headings styles.
2	Alt Text for Images	Counted each time an image was missing alt text.
3	Colour Contrast	Counted each time a resource had low colour contrast for the text compared to the background.
4	Hyperlinks	Counted each time a resource had non-informative hyperlinks.
5	Multimedia Accessibility	Counted each time a multimedia resource lacked accessibility elements, such as transcripts and audio descriptions.
6	Tables	Counted each time a table lacked accessibility elements, such as headers, titles, and captions.
7	Font Sizes	Counted each time a resource contained body text that was smaller than 12-point font.
8 (assessments only)	*Assessments*	*Counted each time an assessment did not include certain accessibility elements, such as readability by screen readers, arrangements for assignments in alternate formats, grading criteria or rubrics, and information about the assessment (due date in course calendar, points possible/grade weightage, word count/page length).*

Note: See Appendix A for a more in-depth version of the checklist.

Phase 2 - Blackboard Ally Accessibility Score

After researchers manually checked all 200 resources against the 8-Step Accessibility Checklist, the 136 resources in Group 1 (non-assessment resources) were uploaded to Blackboard Ally and received an accessibility score. Scores range from Low to Perfect where the higher the score the fewer accessibility issues Blackboard identified.

- Low (0-33%)
- Medium (34-66%)
- High (67-99%)
- Perfect (100%)

The resources in this group included PDFs, DOCX, Rise, Storyline, and Blackboard Editor content, because each of these files could be run through Blackboard Ally to receive an accessibility score.

Results

The results from the document analysis provide a baseline for accessibility at JIBC and a starting point for researchers to track improvement in the future. The aim is to increase PD on accessibility and then repeat the document analysis on the same courses after they have been updated to include more accessible content.

Phase 1 - 8-Step Accessibility Checklist

In Phase 1 of the document analysis, researchers counted each instance a resource failed to meet an accessibility criterion outlined in the 8-Step Accessibility Checklist. All 200 resources went through the Phase 1 accessibility analysis. Table 3 shows the total number of non-accessible instances broken down by checklist item and course.

Table 3

Accessibility Issues by Course

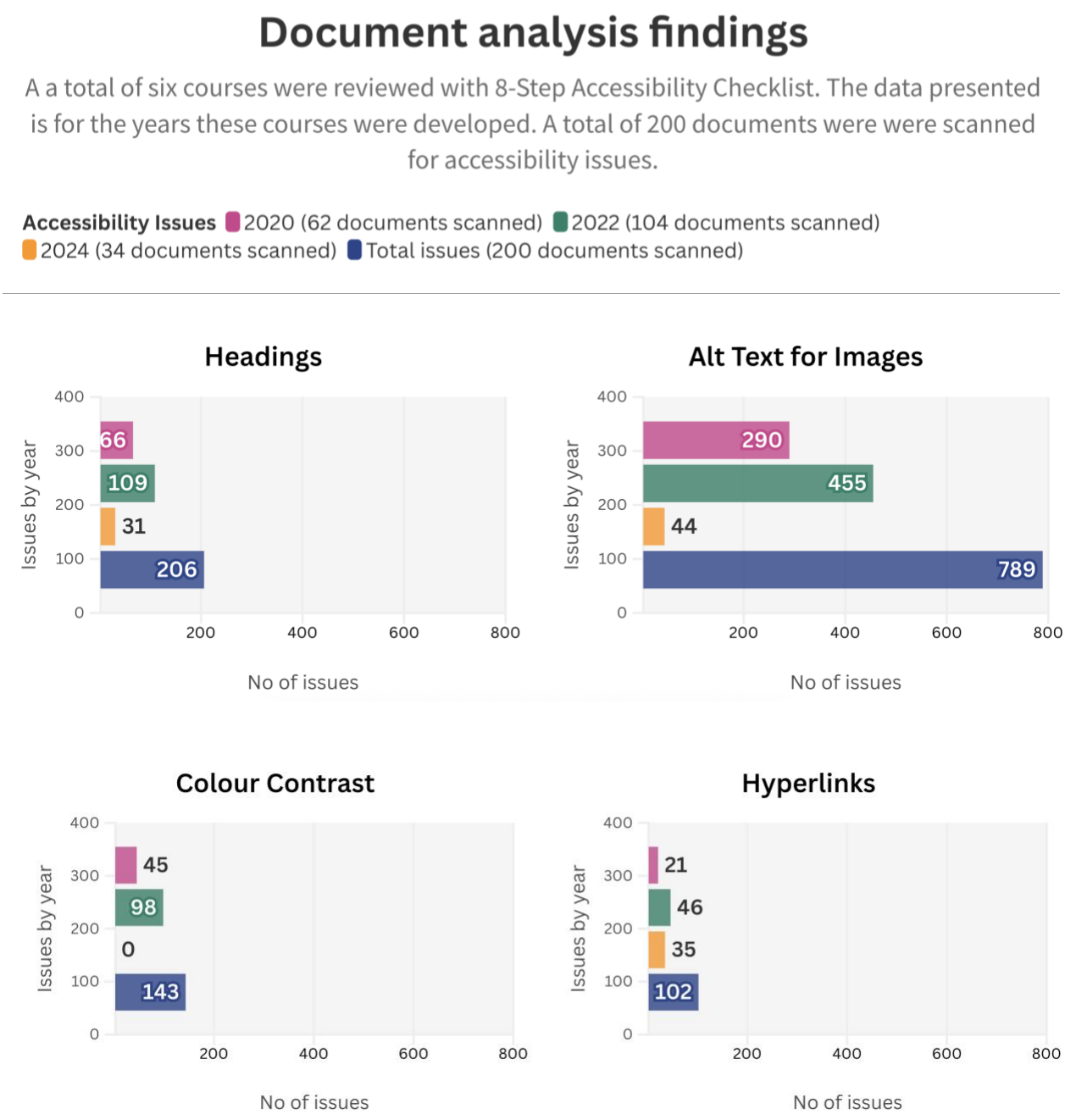
Accessibility Issues	C.1	C.2	C.3	C.4	C.5	C.6	Total
Headings	33	33	85	24	100	28	206
Alt Text for Images	39	251	356	99	57	5	789
Colour Contrast	1	44	42	56	6	0	143
Hyperlinks	2	19	43	3	18	17	102
Multimedia Accessibility	0	3	26	31	5	2	67
Tables	1	28	35	11	5	4	81
Font Sizes	5	16	25	26	3	3	78
Assessments	4	3	40	16	3	0	66
Total Resources	16	46	58	46	17	17	200

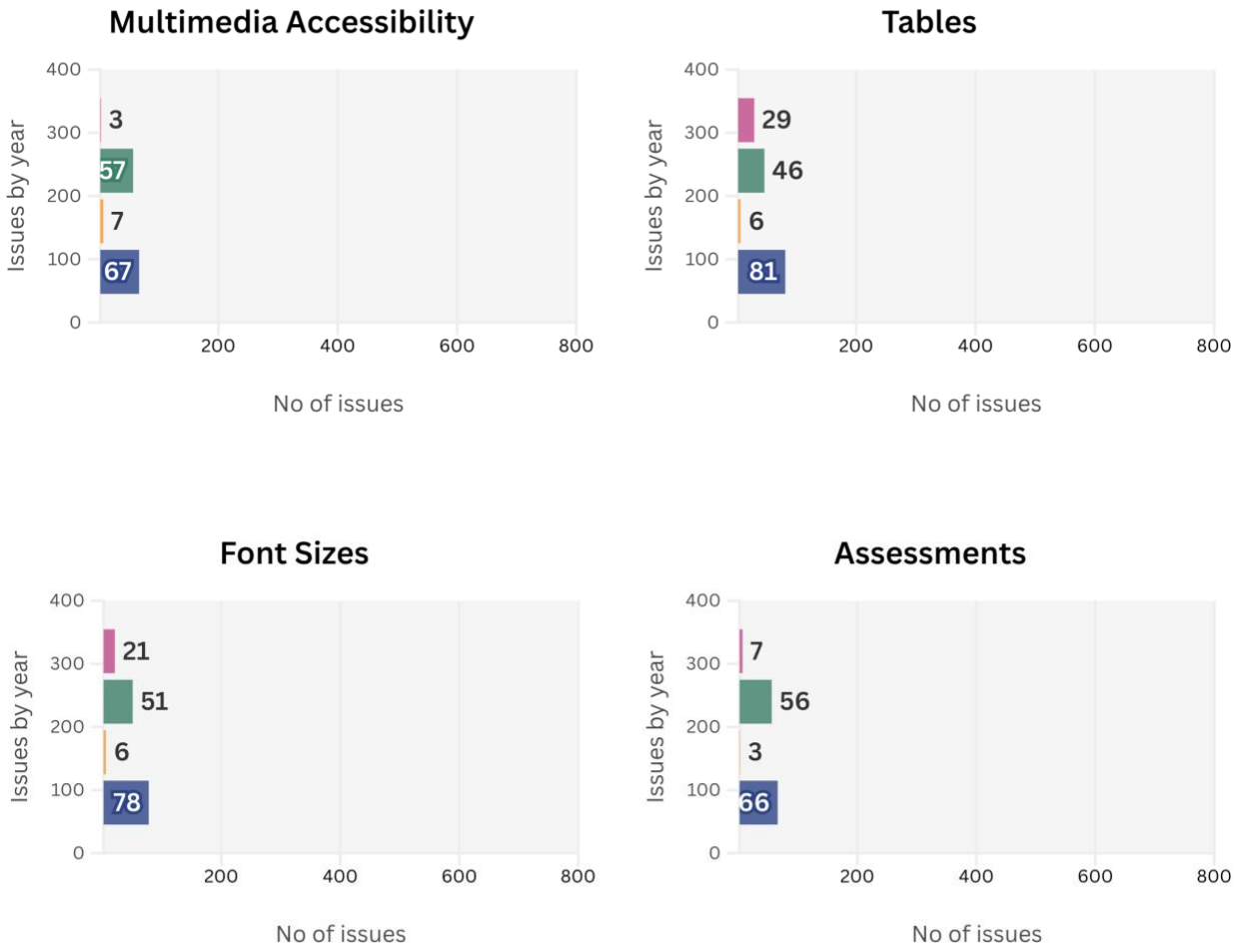
Note: In total, 200 files were scanned from six courses that were built between 2020-2024. The total number of issues per course is outlined in the table.

Overall, the number of accessibility issues shows researchers that these online courses are not equipped to support students with disabilities or students who require accessible resources. In addition, specific issues around images and assessments were flagged. The total issues are visualized using a Flourish Story in Figure 1, which clearly identifies Alt Text for Images as the primary issue with the highest number of instances.

Figure 1

Document Analysis Findings – Flourish





Note: To further explore the Flourish visualizations for the document analysis, visit Research Story – Understanding our documents.

Images Missing Alt Text

In Phase 1, researchers identified missing alt text on images as a major issue. This included irrelevant description for images, image attribution being used as alt text, conceptual images not marked as decorative and images missing alt text entirely. There was a total of 789 instances of these types of missing or irrelevant alt text.

Assessments

Researchers also found multiple instances of inaccessible quizzes and assignments. Out of 66 assignments, no assignments included instructions for accommodation or options for alternate formats. For example, students lacked instruction on whom to contact for technical support on exam day.

There were also inconsistencies in providing clear requirements to students on expected deliverables for assignments. Only 64% of assignments included a rubric or grading criteria.

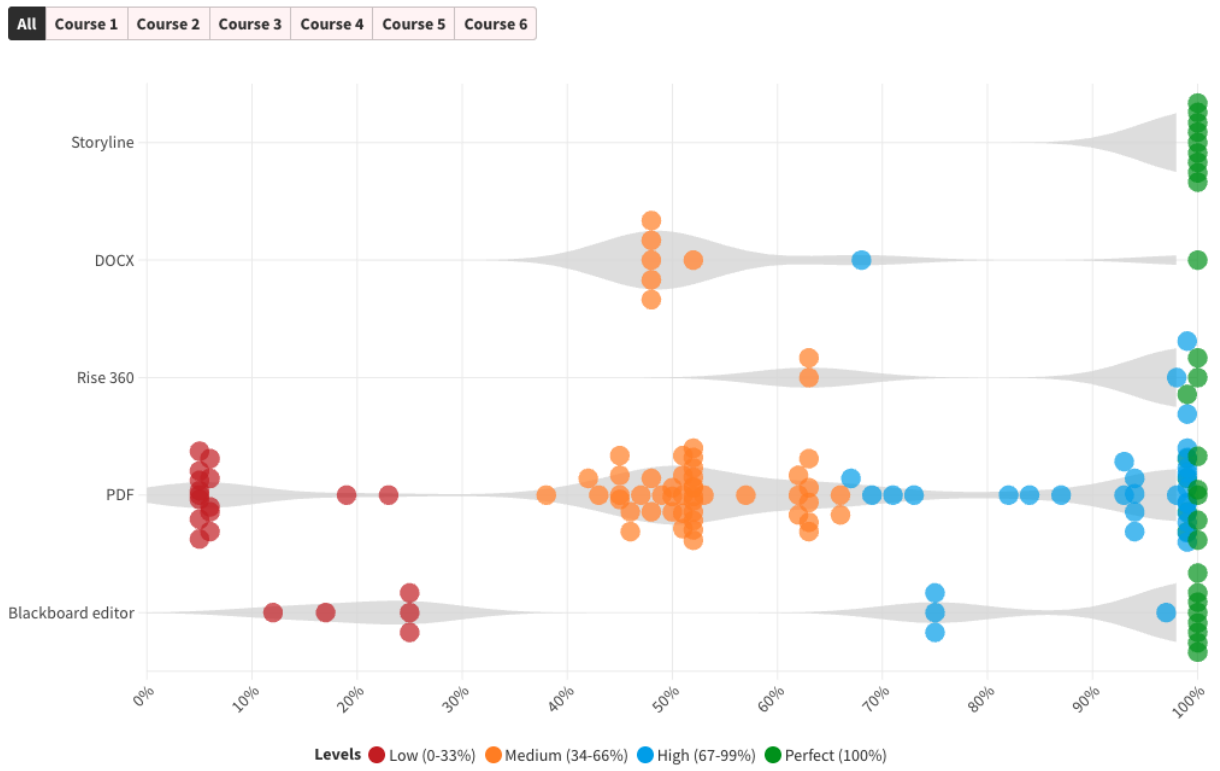
Phase 2 – Blackboard Ally Accessibility Scores

In Phase 2 of the document analysis, resources in Group 1 (all non-assessment resources) received a Blackboard Ally accessibility score. Table B.1 in Appendix B shows the low, average, median, and high scores per course broken down by resource type.

The team created a Flourish Story to visually depict individual Blackboard Ally scores. These are broken down by course and resource type. A snapshot of all courses and resource types is in Figure 2.

Figure 2

Accessibility Scoring - Flourish



Note: To further explore the Flourish visualizations for the Blackboard Ally accessibility scores, visit Research Story – Accessibility Scoring.

After comparing the results from Phase 1 and Phase 2 of the document analysis, there were a few key takeaways.

Blackboard Ally Scores – Inconclusive for Third-Party Software

Blackboard Ally Accessibility Scores were not always conclusive or accurate. In Ally, 9 files developed using Storyline were scanned and all returned a Perfect accessibility score of 100% (Figure 2). Even though Ally produced a Perfect score for these files, researchers discovered that the content designed and developed using Storyline was not accessible with keyboard navigation. During the manual check of each Storyline file, other accessibility issues were also identified, including missing alt text, poor content hierarchy, and issues with hotspot interactions.

After further reflection, researchers realized that for certain resource types, such as PDFs, images, and DOCX files, Ally accompanies the accessibility score with an explanation of what elements are missing, for example lack of alt text or headings. With some third-party software resources though, such as Storyline and Rise, Ally only provides the score with no specific explanations. The question remains whether Ally actually reads these types of files or not, as for example, Ally does not read SCORM objects (Blackboard, n.d.a).

Word to PDF Accessibility

It is important to note that the accessibility of a PDF document is dependent on the accessibility of the original file, in these cases either Word or PowerPoint. During analysis, researchers analyzed Word and PowerPoint formats that were then exported as PDF. When scored in Blackboard Ally, PDFs always scored low when the original Word and PowerPoint documents had accessibility issues, such as lack of headings, alt text, and low colour contrast.

Difficulty Comparing Courses

It is difficult to compare Blackboard Ally scores across the six courses for several reasons. First, depending on the year the course was created, it was built on either Blackboard Original (2020-2023) or Blackboard Ultra (2024). Blackboard Ultra was designed and developed with additional accessibility features and considers the Web Content Accessibility Guidelines (WCAG) (Blackboard, n.d.b). Therefore, accessibility of certain resource types, such as content built using Blackboard Editor, depends on the version of Blackboard the course was originally built on.

Accessibility of course content also varies depending on if the course contains Rise or Storyline content. Even though both Rise and Storyline authoring tools support Web Content Accessibility Guidelines (WCAG) (Articulate, 2024a), it is difficult to compare across these different systems. Rise offers templated content with blocks which is limited in features, but also offers templates for designing accessible content. On the other hand,

Storyline is a course authoring software that allows designers the flexibility to create custom content.

See Appendix B for a breakdown of Blackboard Ally accessibility scores by individual course.

Discussion

After comparing the results from both the literature review and the document analysis, several discussion points emerged.

Technology Limitations

While conducting the document analysis, specific technology limitations were discovered.

Accessibility of Authoring Tools

Not all Authoring Tools and software applications used for course development create accessible content. Despite being built with certain accessibility features, limitations remain when using applications such as Rise, Storyline, and Blackboard. For example, during the document analysis, researchers identified the following course development features as non-accessible:

- *Rise* - Matching and Sorting activities built using Rise were not accessible with keyboard navigation during the document analysis. At JIBC, the Centre for Teaching and Learning (CTLI) recommends instructors provide a text version of Matching and Sorting activities as an alternative, accessible version.[1]
- *Blackboard Original* - Quizzes built in Blackboard Original did not fully support screen readers with text-to-speech features. During the course development phase, it is imperative for designers and developers to find alternate and creative ways to test knowledge and support students with disabilities. For example, providing alternate formats for students who require accommodation.

Given the scope and limitations in authoring tools, it is vital that course designers are aware of individual software limitations and keep up to date on limitations and benefits. When a software does have accessibility limitations, content creators need to find an alternative way to test knowledge and support students with disabilities. Ensuring that

[1] In a January 2025 Rise update, which happened after the document analysis and before publishing, Rise has reported accessibility enhancements for Matching Knowledge Checks (Articulate, 2025). Sorting activities remain inaccessible, and Articulate recommends not using them when creating accessible content (Articulate, 2024b).

regular PD sessions are offered, or advice is available for individuals using software, can help reduce misuse or the creation of non-accessible content.

Reliance on Blackboard Ally

When creating course content, it is important to not rely solely on Blackboard Ally accessibility checks as this technology can overlook key requirements. While it can be a great tool for scoring documents and it allows instructors to view accessibility feedback quickly, Blackboard Ally sometimes misses out on issues related to document language, missing titles and headers, colour contrast, font size, table headers, and untagged documents. Content creators should consider doing a manual accessibility check before scanning a resource in Blackboard Ally. Although an extra step, this practice could significantly reduce effort at a later stage.

It is also important to understand which resource types are scored more or less accurately by Blackboard Ally and adjust practices when necessary. For example, as discussed in the Results section, content developed in Storyline does not receive an accurate Blackboard Ally score; these resources therefore require both a manual check of accessibility requirements and setting up the original file in specific ways to ensure accessibility. For example, when designing in Storyline it is important to set the focus for each screen element to support keyboard navigation. As seen in the literature review, proactively designing resources with accessibility in mind is more efficient than retroactively adapting content to meet accessibility requirements.

Technology Benefits

While technologies can have limitations that hinder accessibility, there are technologies that can have a positive impact on accessibility.

Using Built in Accessibility Features

Software that has built in accessibility features should be used to aid in creating resources that support all students. Programs like Kaltura, which can create automatic transcripts and closed captions for videos, saves time when ensuring resources meet accessibility standards.

in Microsoft Word, the built in Check Accessibility features is another great example, for checking missing alt text, missing table headers, poor colour contrast, document structure and document access. The features provide content writers with feedback in real-time that can help create accessible Word documents, or if exported to PDF, ensures the PDF is more accessible.

These built in accessibility features are a great starting point for instructors and content creators, but they should not be the only effort put into accessibility. In Kaltura, for example, automatic transcripts are often only 85% accurate and still require the creator to review and edit the transcript to ensure it is 100% accurate (Kaltura Knowledge Centre, 2025). Although a manual check may be time-consuming, as shown in LaSala et al. (2020), including transcripts with videos can increase all student comprehension, not just students with disabilities.

Need for Professional Development

Based on the results of the literature review and the document analysis, there is an overarching need for additional PD on accessibility.

These points were discussed at length in the literature review, but when viewed alongside the document analysis results, researchers observed several things. First, based on the Blackboard Ally scores, many resources did receive high accessibility scores, which indicates effort is being made to create accessible content. Certain types of resources have higher rates of non-accessible content though, such as images and assessments. PD that focuses on these overlooked elements could help increase the overall accessibility of course content. Keeping in mind the literature review, a focus on explaining both how to make these resources accessible, but also why it's important that they are accessible, would be beneficial.

Another element researchers discovered is the need to ensure everyone understands the benefits and limitations of technology. For example, understanding that an inaccessible Word or PowerPoint will lead to an inaccessible PDF and that Blackboard Ally scores for certain types of content should be double checked manually.

Recommendations for Future Research

Literature Review Gap

- **Effect of COVID-19 on barriers**: A significant challenge in the literature review is the lack of research on how COVID-19 has affected the barriers instructors face when creating accessible online learning resources. While several articles reference COVID-19 (Briggs et al., 2024; Cooper, 2021; Miller, 2023), they primarily focus on the initial shift to online learning during the pandemic rather than the long-term effects on accessibility in online learning environments. This challenge may exist for several reasons. First, at the time the literature review was conducted in 2024, we may still be too close to the rapid transition to online learning caused by COVID-19 to fully understand its long-term implications for instructor challenges in

creating accessible learning environments. Second, relevant research may already exist but was beyond the scope of this study.

- **Non-Systematic Approach:** Given the scope of the research, a non-systematic approach was employed for the literature review. Articles were selected based on thematic relevance, methodological rigor, and the depth of evidence provided. This approach ensured coverage of key themes, but it is recognized that the non-systematic approach may have omitted relevant studies.

Document Analysis Challenges

- **Focus on Digital Accessibility**: Our research primarily examined digital accessibility rather than Universal Design for Learning (UDL). While UDL encompasses a broader approach to course accessibility and inclusion, our study focused more on the technical aspects of digital accessibility, identifying barriers educators face and best practices for creating accessible content.
- **Keyboard Navigation Data**: Although we assessed whether each document was accessible via keyboard navigation, we did not systematically record data to derive insights from this aspect of accessibility.
- **Limited Time Frame for Course Analysis**: The online and hybrid courses analyzed were developed between 2020 and 2024. As a result, our study lacks data on courses created over five years ago, which could provide a comparative perspective on accessibility practices over time.
- **Lack of Evaluation for Specific Course Types**: Our study did not evaluate educational documents created in post-employment training, paramedicine, and firefighting courses. These courses often include scenario-based and hands-on components, which pose unique accessibility challenges that remain unexplored in our analysis.
- **Lack of Data on Alternate Format Downloads**: We were unable to obtain data on the usage of alternate formats. Currently, Immersive Reader in Blackboard Ally does not fully support accessibility features and was consequently removed from Blackboard as an alternate format. In the future, establishing a data collection approach for alternate format downloads will be essential for designing and testing more accessible educational documents.
- **External Links and PDFs:** Some of the courses that were reviewed during the Document Analysis contained external links and PDFs, which were not reviewed. These resources may make up significant elements of a course that add or detract

from how accessible a course is, but as they were not created by instructors, they were deemed out of scope of this research project.

Conclusions

This study explored the barriers instructors face when creating accessible online learning content and provided a baseline assessment of accessibility at JIBC. The literature review highlighted key challenges, including ensuring beneficial PD opportunities, insufficient resources, and misconceptions about disabilities. Additionally, a document analysis of six online courses identified recurring accessibility issues, such as inadequate alt text and a lack of alternative assessment formats. Based on these insights, future efforts will focus on enhancing PD opportunities to better support instructors in improving accessibility. A follow-up analysis of course materials in the coming years will help assess the effectiveness of these initiatives in creating more accessible online learning environments.

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Appendix A

8-Step Accessibility Checklist – Long Version

The following checklist is the long version of the 8-Step Accessibility Checklist used during Phase 1 of the document analysis. It outlines the specific elements researchers counted under each step.

1. Headings
    - Looking for absence of a clear content hierarchy using proper heading styles.
    - Counted each time:
        - No presence of document titles.
        - Heading styles not uniformly applied throughout the document.
        - The document lacked structure.
        - The document was not navigable by headings.
2. Alt Text for Images
    - Looked for any images that were missing alt text.
    - Counted each time:
        - An image lacked a relevant, descriptive alt text.
        - Images were not marked as decorative when appropriate.
3. Colour Contrast
    - Looked for resources that had low colour contrast for text and content.
    - Counted each time:
        - Content had low readability and legibility due to inadequate contrast.
        - Text had less than 4:5:1 contrast ratio compared to the background colour.
4. Hyperlinks
    - Looked for resources that had non-informative hyperlinks.
    - Counted each time:
        - Hyperlinks lacked descriptive text.
        - Hyperlinks used vague, non-informative labels (e.g., “click here”).
        - Hyperlinks were inaccessible, overly long, or unclear.
5. Multimedia Accessibility
    - Looked for resources that had low multimedia accessibility.
    - Counted each time:
        - Multimedia resources lacked complete transcripts of all spoken and relevant non-speech content.
        - Animations and videos were not accompanied by audio descriptions.
6. Tables
    - Looked for resources that had non-accessible tables (headers, titles, and captions).

- Counted each time:
    - Tables were missing appropriate titles or captions.
    - Tables lacked clearly defined column and row headers.
    - Tables used merged or split cells to present data.

7. Font Sizes
    - Looked for resources with illegible font sizes.
    - Counted each time:
        - Body text was smaller than 12-point font.
        - Footnotes or endnotes were smaller than 9-point font.
8. Assessment
    - Looked for resources that did not recognize human limitations by including additional details, such as:
        - Due dates in the course calendar.
        - Word count or page length requirements for assignments.
        - Possible points or assignment weightage.
    - Looked for assessments that did not
        - Support readability by screen readers, including compatibility with narration tools.
        - Include alt text on images in the assignment.
        - Make provisions for assignments in alternate formats.
        - Include grading criteria or a rubric.

Appendix B

8-Step Accessibility Checklist – Long Version

Blackboard Ally scores from Phase 2 of the document analysis. Scores are broken down by resource type, course, as well as low, average, median, and high scores.

Table B.1

Blackboard Ally Scores

Scoring levels	Blackboard Editor	DOCX files	PDFs	Rise 360	Storyline	Total Resources
C.1 Total	3	--	5	2	--	10
Low	25%		51%	100%		
Average	75%	--	77%	100%	--	--
Median	100%	--	84%	100%	--	--
High	100%		99%	100%		
C.2 Total	14	--	26	4	--	44
Low	12%		5%	63%		
Average	72%		68%	81%		
Median	86%		63%	81%		
High	100%		99%	99%		
C.3 Total	--	6	26	--	9	41
Low		48%	6%		100%	
Average		51%	60%		100%	
Median		48%	50%		100%	
High		68%	99%		100%	
C.4 Total	--	1	27	--	--	28
Low		100%	5%			
Average		100%	44%	--	--	
Median		100%	51%			
High		100%	100%			
C.5 Total	--	--	3	--	--	3
Low			52%			
Average			63%			
Median			66%			
High			71%			
C.6 Total	--	1	8	1	--	10
Low		100%	19%			
Average		100%	77%			
Median		100%	97%			
High		100%	100%			