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Online Learning & COVID-19: Exploring Digital Accessibility

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Abstract

The COVID-19 pandemic impacted nearly all aspects of life in 2020, leading to significant social, economic and technological change. Educational institutions were particularly impacted as social distancing and lockdowns precluded student attendance on-campus or in-class. Universities around the world found themselves pivoting to fully online delivery of learning content, assessments and collaboration, while striving to minimise disruption or loss to pedagogical fidelity. While universities achieved what many thought impossible, the rush away from bricks and mortar education did surface an underlying issue that while always present, had mostly been in the background. This issue was digital accessibility, a mixture of technology, policy and empathy that allows electronic content and systems to be consumed and interacted with by users of assistive technologies. This paper outlines the core precepts of digital accessibility, the standards by which it is defined, and the technologies used by people with disabilities to interact with the online world. The authors, reflecting on their own experiences of digital accessibility within the university sector propose a four-quadrant model for institutional support of accessible online learning. This model includes the role of the policy environment, accessibility awareness by faculty, accessibility support roles and the critical nature of IT procurement.

Keywords

Online learning, digital accessibility, WCAG, COVID-19, disability, model

Introduction

In 2020, the arrival of the COVID-19 pandemic saw a significant change in the delivery of courses throughout the higher education sector. While the online delivery of courses is not a new concept, the pandemic saw a notable shift in the role of the Learning Management System (LMS) and the integrated technologies that reside within (Arancibia Muñoz and Halal Orfali). The reality of learners being unable to attend bricks and mortar campuses of educational institutions worldwide during COVID-19 quickly changed the view of the LMS from a supportive role to an essential one (Dhawan; Girik Allo; WHO) making them the primary loci of curriculum and assessment.

This paper identifies a range of issues that have impacted learners with disabilities through the rapid transition to online-only learning and presents a four-quadrant model for institutional support of accessible online learning.

For people with disability to gain access to higher education, two critical things must occur.

1. People with disabilities need to have access to the assistive technologies they need on the device of their choice
2. The content being accessed through those assistive technologies is itself, accessible.

In relation to the first point, the rapid evolution of assistive technologies in mainstream computing and mobile devices has had a profound impact on the accessibility and affordability of support for people with disability in recent years (Koch). Contemporary examples include VoiceOver in Mac, iPhone and iPad, the TalkBack screen reader on Google Android and a more advanced version of Narrator on Windows including the third-party open-source screen reader NVDA (Apple; Google; Microsoft; NVDA). It should be noted that this paper will make frequent reference to visual disability in the context of digital accessibility. This choice is not

designed to marginalise the broad and complex range of specialist need that exists amongst internet users, but rather to provide a reference norm that is commonly used in the literature and general accessibility dialog.

With the first aspect largely addressed, the next challenge is the authoring of learning content in an accessible way, allowing it to be 'visible' to these assistive technologies. Most higher education institutions refer to the internationally recognised Web Content Accessibility Guidelines (WCAG), produced by the World Wide Web Consortium (W3C) and which at the time of writing exists as version 2.1 (W3C). The challenge for tertiary institutions trying to meet accessibility standards is one of complexity. The interrelationships between the specifics of WCAG, assistive technologies and the specific accessibility needs of learners across a range of disability types can rapidly become overwhelming for accessibility novices (Kearney-Volpe et al.; Bradbard and Peters). It is both the contention and experience of these authors that educational institutions looking to provide an inclusive digital learning experience for all students need to look beyond the specifics of guidelines and technologies and examine people and support services instead.

Discussion

Considering the challenges outlined above, the authors propose a four-quadrant model describing a cohesive, whole of institution approach in which digital accessibility standards can exist alongside online learning content and technologies to meet the needs of all students (Figure 1).

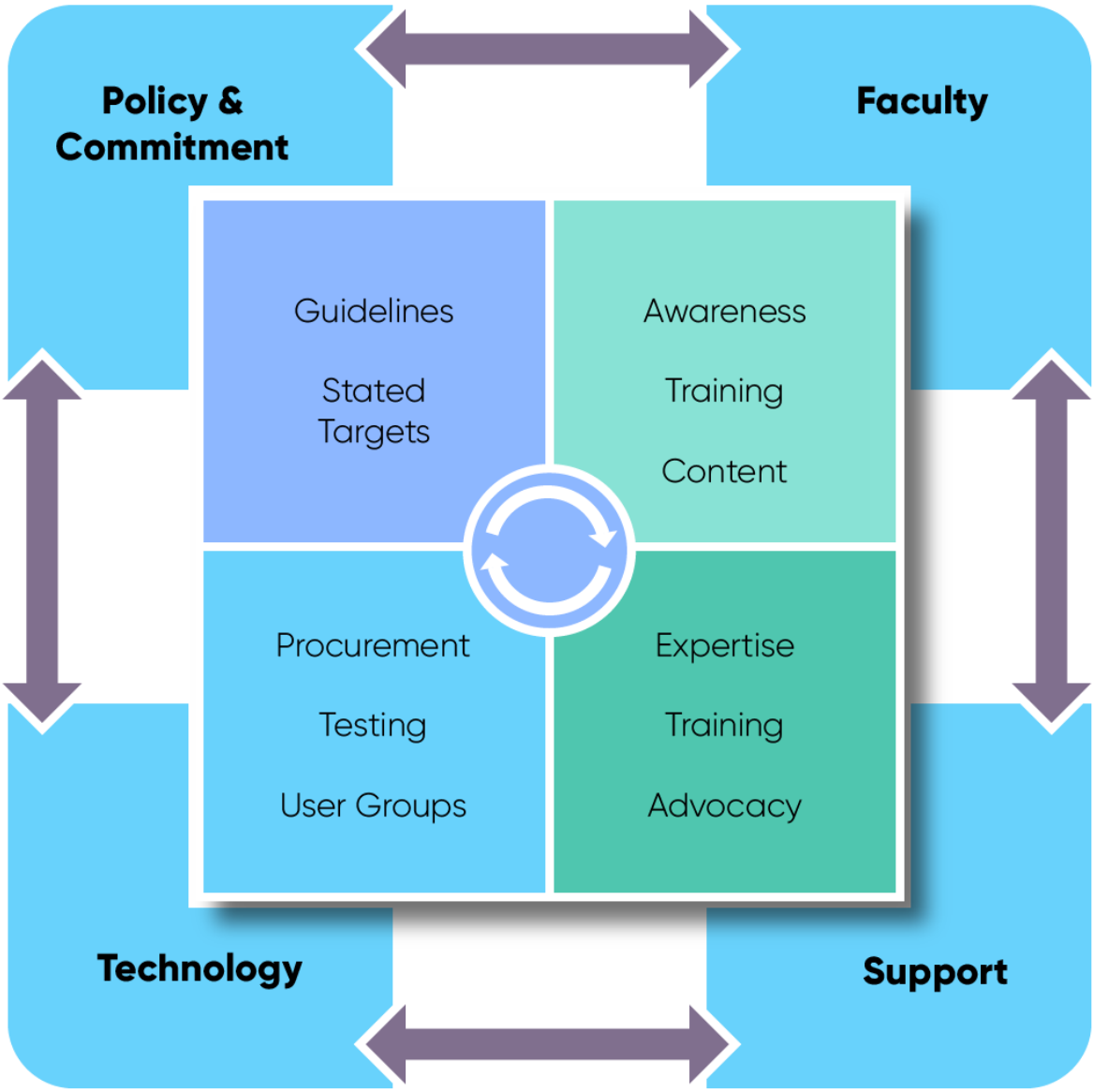

Fig. 1. Four-Quadrant Model for Institutional Support of Accessible Online Learning.

Policy & Commitment

The first and perhaps most important quadrant of the proposed model is that of policy and commitment, where an institution formally recognises the importance of digital accessibility principles and its intention to meet a pre-determined set of guidelines or standards (Axelrod; Sloan, Horton and Gregory). Policy can be a key determinant of educational organisations being

prepared to meet the broad range of skills, supports and technologies required to ensure digital accessibility is a core value rather than a future aspiration. An institution may state their goal for digital accessibility to be referenced against WCAG 2.1 at AA conformance. These accessibility targets should not be buried in policy documents that may or may not be visible to students and the public, but rather be visible on all pages of the organisation's website in the form of an accessibility statement (Olalere and Lazar). Setting specific policy goals (Lazar, Goldstein and Taylor) associated with digital accessibility is a prerequisite for surfacing the very real need for inclusive thinking across all levels and functions of educational institutions (Guilbaud, Martin and Newton).

Faculty (Awareness, Training and Content)

Faculty staff typically have a broad range of responsibilities, including teaching, research and university service. Over the past two decades faculty staff will have become accustomed to using digital technologies as part of their everyday teaching in one form or another and have some awareness of digital accessibility requirements (Michel, Pierrot and Solari-Landa; Moise, Suditu and Netedu; Popescu; Basilaia et al.) This level of awareness can vary significantly from organisation-to-organisation dependent on the focus placed on digital accessibility as part of professional development (PD). The authors of this paper currently work in or have worked in organisations where accessibility is covered through PD, focussing on both the policy expectations (Guilbaud, Martin and Newton) and the practical application of web content accessibility principles. Outside of PD, faculty staff are likely to encounter digital accessibility situations when students contact them directly or through an equity and diversity service when raising concerns about inaccessible content, platforms or teaching practices. It should be noted that the term 'equity and diversity' is broad indeed (Czerniewicz et al.), but in the context of this

paper, we are focussing on the 'equity' component. In most cases, these services can assist students in digital accessibility scenarios where content may need to be converted to a format suitable to individual student need. Within most organisations the equity and diversity support services have the experience, expertise and contacts to get this work done independently of the faculty teaching staff.

Training faculty to understand digital accessibility principles and apply them consistently in the development and delivery of their learning materials is a notoriously difficult task as there is far more nuance present in digital accessibility beyond just guidelines. There exist complex interactions between assistive technologies, operating systems and automated approaches to accessibility assessment. For the uninitiated, digital accessibility can become immediately overwhelming, with the outcome of faculty feeling unable to support their students in an equitable, but sustainable manner. The authors of this paper feel that a pragmatic, targeted approach to digital accessibility training for faculty staff (Arzola) should take priority over more comprehensive expectations of faculty becoming accessibility practitioners. This pragmatic approach might entail the faculty staff being trained in the following aspects of digital content creation.

1. **Use Word and PowerPoint documents:** Microsoft's productivity suite can produce very accessible documents when used correctly, such as using the document structuring tools built into the system (ie Heading 1…6) and placing alternative text descriptions on images. Word, PowerPoint and Excel have in-built accessibility checking that will identify common accessibility issues including colour contrast, lack of alternative text on images, tables containing column headers, slides containing titles and images being in-line with text (Microsoft).

2. **Use the accessibility features of the LMS:** Modern LMS platforms have an increasing number of accessibility features built into them (though some must be purchased as aftermarket add-ons). In many cases these accessibility features are not unlike those discussed in the point above, with a focus on content structure, colour contrast, alternate text for images and analysis of document types. This kind of information is of particular importance when associated with assessment content, documentation, due dates and marking criteria.
3. **Descriptive Links:** Creating informative, descriptive hyperlinks is another accessibility skill that could be readily acquired by faculty through regular PD and applies to both productivity suits and LMS platforms alike. Teaching academics to avoid placing hyperlinks on terms such as 'click here' and 'more info' can be taught easily through the lens of writing styles for digital accessibility. Avoid verbosity for its own sake, but be specific when it will assist students with navigating to content you wish them to read.
4. **Video content:** Lecture capture technology is a common feature of both on-campus and online learning delivery, with in-class captured video being processed and then uploaded to an institutional LMS. From a digital accessibility perspective, one of the most common challenges of lecture captured content is a lack of captions available by default. A range of modern lecture capture platforms, such as Panopto and even MS Teams do have automated captioning functions, though the accuracy of these can be very reliant on sound quality and the clarity of pronunciation by the speaker. In the author's experience, where captioning is required by a student to consume video content, that content is usually human captioned by experts. This human captioning not only takes time and money, but in most cases is used only by those students in need of this service. In an

ideal world the faculty staff member would, in the next delivery of their course, make all those captioned videos available to all students from the commencement of semester.

The suggestions listed above are by no means definitive or likely to be relevant to all institutional contexts. However, after more than a decade of these authors working in curriculum leadership and accessibility roles, it has become apparent that a more fit for purpose approach is required if faculty staff are to be capable of producing digital content relevant to the needs of all users (van Rooij and Zirkle).

Support (Expertise, Training and Advocacy)

Thus far the authors have attempted to establish the need for clear and transparent digital accessibility policy settings and the requirement for faculty staff to both be aware of this policy and incorporate it into their teaching practice. Policy on its own does not bring about the goals it was written to achieve, and in most institutions requires champions and people with expertise to help translate policy into practice (Lazar, Goldstein and Taylor).

1. **Equity and Diversity:** While this is one of the more common terms used to describe support services aimed at providing services to students with a range of specialist needs, it may also be subsumed more broadly under the banner of learner support. The staff who work in these areas typically have broad or focussed expertise within disability support and advocacy and can offer support and advice to both students and faculty. Staff in these roles can advocate for resources, provide input into policy development, and work with IT services to secure assistive technology tools. These roles typically work directly with students to develop contextualised learning plans and then with faculty to help them translate those plans into actionable outcomes (Slater et al.). The authors of this paper have found that forging collaborative relationships with the equity and

diversity staff over more than a decade has significantly improved faculty awareness of the varying needs of students and how best to accommodate these needs in curriculum.

2. **Learning and Teaching:** Few universities would not have a dedicated training and support service tasked with the development and delivery of PD to both faculty and professional staff alike. Centres for learning and teaching typically have a strong focus on curriculum design, assessment and technology enhanced learning. It is through this lens that training in digital accessibility techniques discussed in the previous section can be most effectively leveraged (Chun and Williams).

While teaching institutions may identify these types of services by any number of labels, it is the contention of these authors that this mix of expertise is the minimum required to allow institutions to successfully achieve the digital accessibility standards they have aspired to meet (Marquis et al.).

Technology (Procurement, Testing and User Groups)

The final piece of the digital accessibility quadrant for supporting accessible online content is that of the institutions technology support area, more broadly defined as Information Technology (IT). Whether IT sits within school or faculty structures or is a centralised service, staff associated with these roles are typically tasked with the procurement of digital technology platforms that support digital content development and delivery (Marcelino, Mendes and Gomes; Pombo et al.). In an ideally collaborative organisation, senior IT figures would have input into policy settings relevant to digital accessibility, providing advice as to challenges and solutions to digital inclusivity (Turner-Cmuchal and Aitken). Of the four quadrants discussed in this model, the authors have found that influencing IT procurement and purchasing decisions around a nexus of digital accessibility can be amongst the most challenging.

A number of the authors on this paper have been involved in the procurement processes of student-facing systems ranging from small bespoke systems through to enterprise solutions. While digital accessibility in the form of WCAG 2.0 has been included as criteria in IT procurement processes for some time, until recently it has been little more than a tick box exercise. The vendors would be asked if their product adhered to WCAG 2.0 AA, they would respond yes, and that criteria would be deemed as 'met'. Some vendors would provide evidence that compliance to accessibility guidelines was on their product roadmap, whilst others indicated it was not and never would be. For IT staff, their priorities go well beyond vendors and procurement, as they are also seeking to purchase products that integrate well with the existing IT ecosystem at the institutional level. If a product ticks all the boxes for integration, security, support, quality assurance and cost, then rejecting that product based purely on digital accessibility can be difficult to rationalise with the project stakeholders. These authors have found that over time, where external expertise can be included in the IT decision making process, and those contributions are seen to be a value add, things can change for the positive (Falloon and M. O'Reilly).

Institutional commitments to accessibility standards will be extremely difficult to achieve where student facing systems are procured without due rigor being applied to a product's inclusive design. This issue can be particularly pervasive where internal sentiments reflect assumptions that accessibility requirements are onerous and only apply to a small number of stakeholders (Pionke). The role of IT in procuring systems that enhance rather than prevent accessibility outcomes cannot be overstated (Astbrink and Tibben).

Conclusions

This paper has outlined some of the challenges facing educational institutions in transitioning to fully online delivery in a time of crisis (Allo; Houlden and Veletsianos; Li and Lalani) and the impact on digital content accessibility. Digital accessibility is complex, multi-faceted and never a one-size-fits-all scenario. While the scope of this paper cannot hope to cover all the inherent intricacies of digital accessibility across all institutional contexts, it does propose a model of four key quadrants of activity that can enable the successful transition to a more inclusive way of thinking about online teaching and learning. Individual elements of this model are suggested in passing or covered in depth across a range of literature (Sieben-Schneider and Hamilton-Brodie) but are realised by the professional experiences of these authors in the education and commercial sectors. Some institutions are likely to be working cohesively in a structure not dissimilar to the suggested model (Lazar; Sieben-Schneider and Hamilton-Brodie; Zalavra et al.), while others may experience a level of fragmentation and dissonance that leaves the provision of accessible learning to random happenstance. While it has taken more than a decade for these authors to see these four quadrants gradually materialise in the university sector, the coming of COVID-19 has been a disrupting moment (Lazar) and has brought the issue into sharp focus. The authors feel that due to this disruption, educational institutions have an opportunity, as well as an obligation, to reshape their approach to accessible online learning to one that is transparent, collaborative and primarily focussed on a key set of stakeholders (Cooper et al.). Students.

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