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The Digital Inclusion of Students with Learning Disabilities in **Open and Distance e-Learning: Going Beyond Access to Empowerment**

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Abstract: The digital inclusion of students with learning disabilities in Open and Distance e-Learning (ODeL) requires more than just providing; it must also focus on empowering these students. This paper argues that true inclusion enables students to actively engage in processes that address their unique needs and foster responsibility for participation and success in a digital learning environment. The paper emphasises that empowerment goes beyond providing the necessary technology and internet connectivity. It involves training students in digital technologies, mentoring them to build confidence, encouraging selfadvocacy, exercising agency in their learning, involving them in plans and processes that aim to address their needs, and providing accessible information and inclusive pedagogy. Using the Capability Approach, a human development framework that emphasises providing people with alternative practical opportunities to achieve valued outcomes, this conceptual paper offers a better and more nuanced understanding of empowerment in the context of disability and digital inclusion. The



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Capability Approach allows an assessment of how well a person can function and achieve meaningful outcomes with the available resources, which is critical to empowering students with learning disabilities and addressing their specific needs. This research seeks to address technological, social, and practical barriers and offers practical recommendations for ODeL institutions to enhance the digital inclusion of students with learning disabilities. The study is significant in its potential to inspire positive change in how well ODeL institutions support students with learning disabilities to ensure that they are not only included, but also empowered to succeed in their studies.

Keywords: access, digital inclusion, empowerment, inclusion, learning disabilities, Open and Distance e-Learning

L'inclusion numérique des étudiants en situation de handicap d'apprentissage dans la formation ouverte et à distance (FOAD) : Aller au-delà de l'accès vers l'autonomisation

Résumé : L'inclusion numérique des étudiants en situation de handicap d'apprentissage dans la formation ouverte et à distance (FOAD) ne se limite pas à leur donner accès à des ressources numériques; elle doit également viser leur autonomisation. Cet article soutient qu'une véritable inclusion permet aux étudiants de s'engager activement dans des processus répondant à leurs besoins spécifiques, tout en leur conférant la responsabilité de leur participation et de leur réussite dans un environnement d'apprentissage numérique. L'autonomisation va audelà de la mise à disposition des technologies et de la connectivité Internet. Elle implique la formation aux technologies numériques, le mentorat pour renforcer la confiance en soi, l'encouragement à l'autoreprésentation, le développement de l'agentivité dans l'apprentissage, l'implication des étudiants dans l'élaboration des plans et processus visant à répondre à leurs besoins, ainsi que l'accès à une information accessible et à des approches pédagogiques inclusives. S'appuyant sur l'Approche par les Capabilités, un cadre de développement humain mettant l'accent sur la mise à disposition d'opportunités pratiques alternatives pour atteindre des résultats valorisés, cet article conceptuel propose une compréhension plus nuancée de l'autonomisation dans le contexte du handicap et de l'inclusion numérique. Cette approche permet d'évaluer dans quelle mesure une personne peut fonctionner et atteindre des résultats significatifs avec les ressources disponibles, un aspect crucial pour autonomiser les étudiants en situation de handicap d'apprentissage et répondre à leurs besoins spécifiques. Cette recherche vise à identifier les obstacles technologiques, sociaux et

pratiques et à formuler des recommandations concrètes pour les institutions de formation ouverte et à distance (FOAD) afin d'améliorer l'inclusion numérique des étudiants en situation de handicap d'apprentissage. Cette étude est particulièrement importante en raison de son potentiel à inspirer des changements positifs dans la manière dont ces institutions soutiennent ces étudiants, en veillant à ce qu'ils ne soient pas seulement inclus, mais également rendus plus autonomes pour réussir leurs études.

Mots-clés : accès, inclusion numérique, autonomisation, inclusion, handicap d'apprentissage, formation ouverte et à distance (FOAD).

Introduction

Although open to selective interpretation, empowerment is associated with terms such as agency (Geraghty et al., 2020), autonomy (Bagutayan, 2024), confidence (Kilag et al., 2023;), self-direction (Lemmetty & Collin, 2023), participation (Shafieisabet & Haratifard, 2020) and self-determination (McNaughtan et al., 2022). This multifaceted concept is crucial in advancing social justice, especially for historically disadvantaged and marginalised groups, including women (Jaysawal & Saha, 2023; Hakimi et al., 2024), those living in poverty (Abdulmughni & Al-Abyadh, 2023), refugees (Kanatelia, 2023), and people with impairments and other life-threatening health conditions (Suarez-Balcazar et al., 2023). Empowerment is fundamentally about fostering equity by enabling individuals to access the resources, opportunities, and support needed to fully participate in society and have control over matters that concern one's life (Völker & Doneys, 2021). It involves recognising and enhancing inherent potential, dismantling systemic barriers, and amplifying voices that have traditionally been silenced (Moran et al., 2017). Thus, empowerment can be internal and personal, and external and contextual.

In the context of higher education, empowerment ensures that all students, including those with learning disabilities, can thrive academically and personally. It means creating systems and structures that are inclusive, equitable, and responsive to diverse needs. These systems must go beyond compliance

with minimum accessibility standards to foster environments where students can participate fully, exercise self-determination, and succeed on their own terms (Moran et al., 2017). This aligns with the empowerment theory that underscores the dual focus on processes (how individuals and institutions become empowered) and outcomes (the tangible impact of empowerment) (Zimmerman, 1995).

The Distinction Between Access and Empowerment

A clear distinction should be made between access and empowerment in the context of digital inclusion for students with learning disabilities in Open and Distance e-Learning (ODeL). Access primarily involves the removal of barriers to participation and engagement by enhancing the availability, affordability, and usability of digital tools (Sanders, 2020). These barriers can be inaccessible learning platforms, lack of assistive technologies, or the unavailability of alternative formats such as text-to-speech or closed captions. Access enables students with disabilities to participate but does not guarantee meaningful or equitable engagement. For this reason, Smith et al. (2018) view access as creating the necessary, but not sufficient conditions to address needs.

The difference between empowerment and access is that empowerment emphasises creating learning environments where students can take control of their learning journey, develop confidence in their abilities, be self-directed, and thrive in their studies (Kilag et al., 2023; Lemmetty & Collin, 2023). Empowerment

cultivates agency and promotes achievement by enabling students to make the most of the available resources and services, and to take control of their learning. It is a catalyst for students to achieve their educational goals, develop the necessary skills, and gain autonomy (Baqutayan, 2024), which is essential in distance e-learning settings where self-directed learning is highly encouraged and required for academic success. Thus, empowerment goes beyond mere access to address the broader ecosystem, which includes personalised support, inclusive pedagogy, and digital skill-building, and enhances a sense of belonging in students with learning disabilities who bear the risk of being marginalised in teaching and learning. This means that students are not only included but supported to maximise their potential and thrive. Differences between access and empowerment are summarised in the table below.

	ACCESS	EMPOWERMENT
Goal	To eliminate barriers to participation	To enable meaningful engagement and autonomy
Scope	Technical and infrastructural	Pedagogical, social, and psychological
Focus	Equal opportunity to enter the system	Equitable outcomes and sustained participation
Approach	Compliance-based (e.g. meeting accessibility standards)	Transformative (e.g., inclusive and adaptive practices)
Limitations	Ensures participation but not engagement	Internalised oppression, low self-esteem, and a lack of confidence can prevent a person from fully benefiting from empowerment efforts

Table 1. Key Distinctions Between Access and Empowerment

In summary, access tackles the *what?* and *how?* aspects of inclusion, while empowerment addresses the *why?* and *for whom?* Thus, true digital inclusion in ODeL requires moving beyond the technical provision of resources to creating systems that cultivate confidence and independence while enhancing academic and personal growth. The main advantage of empowerment over access is that while access ensures students with learning disabilities can participate in ODeL, empowerment enables them to succeed independently by building confidence, skills, and self-advocacy. Empowerment goes beyond simply providing entry; it fosters autonomy, engagement, and long-term success in education and beyond. Therefore, focusing solely on access risks perpetuating tokenistic inclusion without addressing systemic inequalities or the deeper challenges faced by students with learning disabilities.

Methodology

This is a conceptual study that develops arguments by challenging existing perspectives on a subject matter. The study focuses on the digital inclusion of students with learning disabilities and proposes new ways of thinking about this subject. Its purpose is to provide emergent ideas that are rooted in the existing literature (Luft et al., 2022), not just to *take stock* of what is known (Jaakkola, 2020). The insights provided in this paper are based on what is learned and known but lacking in addressing digital inclusion beyond access. It focuses on conceptual aspects rather than empirical data. The study adopts a constructive argumentation approach that provides a series of arguments that advance a more holistic understanding of empowerment in the context of disability and digital inclusion in the ODeL.

Problem Statement and Research Questions

Existing research on digital inclusion in online learning for students with learning disabilities is limited. In addition, the concept of empowerment is not explicitly argued in the debates on digital inclusion, especially in the context of learning disabilities and the ODeL contexts. Despite the growing emphasis on digital inclusion, students with learning disabilities in ODeL settings often face unique challenges that hinder their academic success. Literature shows that traditional approaches to digital inclusion primarily focus on addressing the digital divide and providing access to technology (Reddick et al., 2020; Alhassan & Adam, 2021) and accessible learning content (Rao, 2021; Sowell, 2023). However, these measures are insufficient in ensuring full and broad inclusion and fall short of empowering students with learning disabilities to fully engage with learning and succeed in their academic activities. This study focuses on individual and institutional empowerment, where both students and the university should be able or enabled to address the specific needs of students with learning disabilities. Empowerment and digital inclusion in ODeL are explored in this study by addressing the following research guestions:

- 1. What barriers hinder the digital inclusion and empowerment of students with learning disabilities in ODeL?
- 2. How can ODeL institutions design and implement strategies to enhance digital inclusion in relation to access and empowerment for students with learning disabilities?

Significance of the Study

The paper is important in shifting the discourse from access-focused digital inclusion to empowerment-driven strategies. It provides insights that can influence policy, research, and practice in ODeL. In addition, the paper proposes

a transformative approach that redefines how digital inclusion and empowerment are understood.

Theoretical Framework

In this paper, empowerment and digital inclusion are conceptualised within the Capability Approach framework, using the concepts of capability, agency, and democratic deliberation. These concepts relate to opportunities for achieving valuable goals (capability), acting on the things that matter (agency), and being able to voice concerns and contribute to decision-making (democratic deliberation). The Capability Approach was initially developed by Amartya Sen and later expanded by scholars, including Martha Nussbaum, who developed it into a partial theory of justice (Nussbaum, 2011). Central to the Capability Approach is the concept of capability, which refers to an individual's real freedom or opportunities to lead life and achieve what one has reasons to value (Sen, 1999). Capabilities represent the actual possibilities a student has to pursue various activities and states of being, given their personal abilities and external learning conditions. An example of a capability for a student with learning disabilities in ODeL could be the ability to access and effectively use assistive learning technologies to participate fully in higher education.

The Capability Approach framework supports social justice and emphasises the importance of providing equitable opportunities for students to achieve valued doings and beings (Biggeri et al., 2020) that can be cultivated

through empowerment. In the context ODeL, this framework underscores the need for educational institutions to dismantle systemic barriers that hinder the full participation and success of students with learning disabilities. This social justice approach requires ODeL institutions to create inclusive opportunities for meaningful learning and success that not only accommodate diversity, but also empower students to be in control of their learning and success. It means creating conditions of learning that are not limiting but enable students to lead a successful academic life.

The Capability Approach also highlights the importance of providing a range of substantial or genuine opportunities or alternatives to achieve possible goals. This relates to institutional empowerment and places a responsibility on learning institutions to intentionally design e-learning environments that accommodate diverse needs and ensure students engage meaningfully with learning content and demonstrate their knowledge in ways that align with their strengths. Part of the arrangements include having multiple modalities for assessment or options for presenting knowledge (for example, oral presentations, video submissions, long assignments, or practical projects), rather than adhering strictly to traditional methods that may suppress students' potential. The choices, accessibility, and flexibility provided through multiple assessment methods are empowering. Students can engage meaningfully with the curriculum and demonstrate knowledge and creativity in diverse ways that best suit their abilities.

Furthermore, the Capability Approach emphasises the importance of agency in achieving valued outcomes. Sen (1999, 19) defines an agent as "someone who acts and brings about change, and whose achievements can be judged in terms of her own values and objectives." Institutional arrangements or structures should allow an agent to act since one can be intrinsically empowered, but lack the external opportunities or resources to exercise that empowerment effectively (Ahmed & Hyndman-Rizk, 2020). Empowering students with learning disabilities to be agents in their learning could mean involving them as active participants in decision-making processes, especially on suitable reasonable accommodations that meet their educational needs.

Aligned with agency is the concept of democratic deliberations. This concept advances participatory approaches to making decisions (Frediani et al., 2019). It involves public reasoning (Robeyns, 2006), where people air their concerns and list preferences on how issues of concern should be addressed. Participatory policy design ensures that students with learning disabilities are actively involved in developing policies that affect them and have their voices heard.

In sum, the Capability Approach is suitable for framing the analysis of the empowerment of students with learning disabilities in that it accounts for the well-functioning of individuals, enabling institutional arrangements, individual agency, and the recognition of voice. Incorporating the Capability Approach in the e-learning space requires strategies that consider resources, processes, and

participatory practices to empower students with learning disabilities to take control and succeed in the digital learning environment.

Literature Review

Learning Disabilities and Education in Open and Distance e-Learning Contexts

Learning disabilities are neuro-developmental disorders that are characterised by variations in information processing, communication, and executive functioning (Learning Disabilities Association of America, 2025). They impact how one processes, transmits, stores, retrieves, and understands information. Research has shown that learning disabilities interfere with how one perceives, thinks, remembers, or learns. They primarily affect language processing, phonological processing, visual-spatial processing, processing speed, memory, and executive functions such as planning, self-organisation, and decision-making (Lytra & Drigas, 2021; Firoozehchi et al., 2023; Khan & Lal, 2023). This, in turn, influences the ability to comprehend or use spoken or written language, do mathematical calculations, coordinate movements, direct attention, and develop other skills needed for learning activities (Lipka et al., 2019; National Institute of Neurological Disorders and Stroke, 2022).

Common types of learning disabilities are dyslexia, dyscalculia, dyspraxia, and dysgraphia. Dyslexia may result in the underdevelopment of essential skills such as reading (accuracy, rate/pace, decoding, fluency, and comprehension), writing (pace, accuracy, and expression), spelling, and speaking (fluency) (American Psychiatric Association, 2013). The difficulties presented by dyslexia may be inconsistent with one's intelligence quotient (IQ), and age (Snowling et al., 2020). Students with dyslexia may find it challenging to read and understand dense academic texts, especially in self-directed learning environments such as distance learning. Some have a slow reading pace that makes it challenging to read and finish long digital materials, particularly those without features like text-to-speech, font customization, or other accessible formatting. Text-tospeech applications, for example, are important in reducing mind-wandering in students with dyslexia (Bonifacci et al., 2022). The difficulties in reading, writing, and comprehension may result in prolonged times to complete assignments and meet deadlines. ODeL students may require digital material with multimedia components to reduce reliance on written content, which can be challenging for students with dyslexia. Students may also benefit if offered options for presenting knowledge such as oral presentations, group projects, diagrams, and videos to avoid writing since it can be problematic to them.

Furthermore, students with dyslexia, which commonly comorbids with Attention Deficit Hyperactivity Disorder (ADHD) (Argyriadi et al., 2022), often face challenges in time management and many struggle with the heavy workload and the demands of higher education. Existing knowledge shows that academic procrastination, which may result from poor time management skills, is common

among students with learning disabilities and has a negative impact on their academic performance (Goroshit & Hen, 2021). Students may lack time and workload management skills (Doyle, 2020), leading them to meet deadlines hastily and sometimes submit substandard work. Therefore, students who lack real-time support may be disadvantaged.

Dyscalculia, which commonly coexists with dyslexia, affects mathematical abilities and visual-spatial perception (Aquil, 2020; Peters et al., 2020). A student's number sense (symbolic and non-symbolic), memorisation of arithmetic facts, accurate mathematical calculation, or accurate mathematical reasoning is significantly impaired, causing difficulties in learning number-related activities (American Psychiatric Association, 2013; Decarli et al., 2023). Some scholars, including Lewis et al. (2020) refer to it as a mathematical learning disability, highlighting its impact on learning mathematics. Part of the support rendered to ODeL students with dyscalculia who enrol in courses with mathematical components can include increased access to assistive technology and tools that aid numerical calculations and tailored learning plans focused on enhancing mathematical ability.

Dysgraphia is mainly characterised by difficulties with writing skills, including handwriting, poor spelling, grammar, and written expression of symbols and words (Chung et al., 2020; Drotár & Dobeš, 2020; Šafárová et al., 2021). Dysgraphia often coexists with dyspraxia, which affects fine and gross motor coordination and causes slow and inaccurate movements (Castellucci &

Singla, 2024). People with dysgraphia experience difficulties participating in activities that involve mainly writing, drawing, and other physical activities.

Of note is the fact that learning disabilities can exist despite normal intelligence (Seshadri et al., 2023), good educational opportunities, resources, and proper instruction (Kormos & Smith, 2023), highlighting the inherent and inevitable challenges students with such disabilities face. Hence, it is important to decouple achievement from ability and that having a learning disability does not mean one lacks intelligence or effort. Observable achievement may not accurately reflect a student's actual potential and cognitive ability due to differences in information processing. Variations in information processing necessitate reasonable accommodations and support systems that ensure students' equitable access, participation, and success.

In ODeL, students with learning disabilities may face structural and systemic barriers that hinder their full inclusion, participation, and success. These barriers include difficulties with text-heavy content, digital fatigue, userunfriendly e-learning platforms, and assessment practices that fail to accommodate diverse learning needs (Quinn et al., 2020; Muktamath et al., 2021; Al Otaiba & Petscher, 2020; Peterson et al., 2021). Furthermore, the invisible nature of learning disabilities often leads to insufficient recognition and inadequate support, leaving these students at risk of exclusion. Given the outlined challenges, empowerment requires ODeL institutions to address both intrapersonal and interactional dimensions (Moran et al., 2017). This includes

having policies and practices that promote equity, accessibility, participation, and success. More importantly, systems must enhance students' confidence, selfefficacy, and self-advocacy.

The Open and Distance e-Learning Landscape

ODeL promotes wider access to higher education, mostly to populations that were historically excluded due to social, geographic, economic, and systemic inequities. ODeL settings overcome geographical and temporal constraints and have democratised education by reaching students who are unable to pursue traditional forms of education. It allows students to learn from virtually any location, whether it is their homes, workplaces, or any other place of convenience. ODeL's flexible and accessible educational approach is valuable for students with learning disabilities by offering a more adaptable learning environment that can accommodate varying paces and styles of learning.

The foundation of ODeL rests on the integration of technology and pedagogy. With the advancement of digital platforms and online resources, ODeL institutions are able to deliver courses remotely unlike contact learning institutions. The remote access to university websites, online classes, learning material, assessments, and other important information reduces the challenges associated with the physical presence of a student with learning disabilities. Studies have shown that students with disabilities are more likely to enrol at ODeL institutions than in traditional contact universities (Pearson et al., 2019;

Chigunwe, 2022) and perform better in this educational context (Erickson & Larwin, 2016). ODeL creates a more comfortable learning environment for those who experience sensory overload due to tight timetables or anxiety due to overcrowded halls, or those who fall behind due to fast-paced lectures and exclusive lecture presentations that are not designed with sensitivity to disability. In addition, communicating through written mediums as opposed to face-to-face interactions that require immediate responses, is convenient for students with information processing deficits who require more time to think and give a sensible response. Thus, ODeL offers a conducive learning environment for students with learning disabilities.

Despite the various benefits of ODeL to students with learning disabilities, it can also present disadvantages. The geographical dispersion and physical separation from others can lead to feelings of isolation and loneliness, which can be detrimental to students with learning disabilities who already experience psychological disturbances (Aro et al., 2022). It is common for students with learning disabilities to experience episodic depressive moments that affect their availability for, or willingness to learn. Limited physical interaction can exacerbate these emotional challenges.

In addition, the physical absence of students and lecturers in distance elearning can affect the student-lecturer relationship that is necessary for communicating and understanding the unique learning needs of students. Students may struggle to form a relationship with a lecturer with whom they

have no physical social interaction and may not be comfortable disclosing a disability and explaining their learning needs. This challenge is intensified where resources for video conferencing are limited. In addition, students who need to ask more questions and get clarity during a broadcast lecture may not be able to do so easily since the setting typically makes it difficult to receive immediate responses and timely support. The physical presence of lecturers is important for instructional effectiveness (Alamri & Tyler-Wood, 2017). It allows for immediate feedback, personalised interactions, and the adaptation of teaching methods in real-time, based on students' engagement levels. Therefore, students' engagement levels may be negatively affected in ODeL settings due to a lack of physical connection.

Furthermore, ODeL requires a great deal of self-directed learning where students are expected to autonomously manage time and learning activities properly. A high level of autonomy and responsibility is required for selfdirected learning (Loeng, 2020), but this can be lacking in students with processing disorders. Learning disabilities, as observed by Janeslätt et al. (2019) and Couzens et al. (2015), can affect the full development of important articulation skills for self-directed learning such as time management, organisation, decision-making, memory, and planning. Hence, students may struggle to manage multiple due dates and miss important deadlines for assignments (Terras et al., 2020).

Discussion

Digital inclusion is important in ODeL since this learning arrangement utilises technology for instruction, assessment, grading, and communication. Access and empowerment underpin debates on digital inclusion since digital inclusion involves the availability of digital tools, accessible and usable information, having proper support, and possessing the right skills and agency to act on matters of concern (Perez-Escolar & Canet, 2022). Earlier studies, specifically Bradbrook and Fisher (2005), cited in Perez-Escolar and Canet (2022), explain that digital inclusion encompasses connectivity, capability, content, confidence, and continuity. Referred to as the Five Cs, they highlight the essential elements required for meaningful digital inclusion. Connectivity ensures access to digital resources, while capability focuses on the skills needed to utilise the resources effectively. Content emphasises the availability of relevant and accessible materials, and confidence addresses the user's selfassurance in navigating digital environments. Continuity underscores the importance of sustained access and ongoing support to prevent digital disengagement. All these Cs provide a comprehensive framework for advancing inclusive digital experiences in e-learning. This understanding highlights that students need more than just access to resources; they also require inclusive settings, skills, and other internal capabilities to facilitate success and an overall positive educational experience. Hence, it is shallow to conceptualise empowerment solely around resources and outcomes; empowerment

encompasses processual elements that demonstrate the journey to the achievement of outcomes.

Most critical to students with learning disabilities is the use of assistive technologies (McNicholl et al., 2023; Svensson et al., 2021) which include screen readers, voice recognition software, speech-to-text, screen enlargers, audiobooks, audio calculators, and other aids to learning. Limited access to assistive technologies or a lack of the necessary skills to use them (Laufer et al., 2021) can negatively affect students' academic activities and performance in ODeL. Accessibility and usability challenges are experienced when students have unreliable devices, platforms that are not compatible with assistive devices, lack of captions on videos, poor course management systems, inadequate online teaching and learning skills, or limited information presentation formats.

The effective management of learning disabilities largely rests on students' agency to disclose inherent disabilities. Due to the low disclosure of disabilities in ODeL (Kent et al., 2018), university staff may be unaware of students' challenges that emanate from a disability. Also, due to geographic separation and inaccessible or insufficient online information, students may not be aware of the university disability support systems and thus may not know which reasonable accommodations to request (Terras et al., 2015). As a result, there might not be adequate support systems tailored to students' unique needs. Efforts should be made to develop communication channels or improve the interaction between students in ODeL and staff members, so that they can form

relationships that enable open discussions on sensitive issues associated with learning disabilities. This, in turn, can encourage students to explain disabilityrelated challenges and unique learning needs to lecturers and other relevant support departments.

Terras et al. (2015) and Sis and Schumacher (2024) note that some students with disabilities do not disclose them for fear of stigma from lecturers who sometimes perceive them as incompetent and benefiting from an unfair *legup* through accommodations. Compounding the challenges in providing students with suitable disability support are institutional financial constraints that limit the availability of e-infrastructure. This challenge is common in developing countries (Terzoli et al., 2018) where some disability units at universities encounter budget limitations in providing accommodations for students with disabilities (Vincent & Chiwandire, 2019). Ultimately, students are forced to make personal efforts to self-accommodate their learning needs (Manase, 2023), which can be met with unsuccessful attempts and poor results. Therefore, empowering institutions to effectively support students with learning disabilities is necessary.

Added to students' challenges is a lack of skills and experience in administering online e-accommodations. Phillips et al. (2012) established that faculty members find it difficult to offer disability accommodations to distance learners and recommend ongoing training to capacitate them. Earlier studies, including that of Bissonnette (2006) and Kinash et al. (2004) established a lack of recognition of disabilities (including learning disabilities) by lecturers in online

teaching and learning. Nonetheless, Terras et al. (2020) note that there are few options for accommodations for students with learning disabilities in the online learning context. Consequently, universities end up providing one-size-fits-all accommodations such as extending time for testing or completing assignments without making their teaching practices more disability sensitive. This can create a mismatch between students' needs and the support services offered. Therefore, as part of institutional empowerment, lecturers also need to be skilled to ensure that they understand learning disabilities and develop a willingness to meet students' unique learning needs.

Digital In/Exclusion of Students with Learning Disabilities in Open and Distance e-Learning

Prior discussions highlight how institutional systems and practices often fall short of recognising and addressing students with learning disabilities' needs. Building on this, several suggestions are made on how to improve the digital inclusion of these students. In ODeL, strategies for digital inclusion differ based on the specific nature of the disability and the institution's available einfrastructure. In this study's analysis, empowerment is explored at an institutional level, focusing on three key aspects:

- Providing essential resources
- Creating supportive conditions that enable students to effectively utilise these resources

 Advancing a participatory approach where students actively contribute to shaping their educational experiences

A Focus on Accessibility and Usability

Since digital inclusion incorporates access, which can be understood as "creating the necessary, but not sufficient conditions," as postulated by Smith et al. (2018), measures should be taken to ensure that digital learning platforms and resources are designed with accessibility in mind to make it easy for students with learning disabilities to utilise them effectively for learning. Primarily, digital inclusion can be advanced by adopting Web Content Accessibility Guidelines (WCAG). These guidelines facilitate the creation of websites that are accessible to make information easily perceivable, operable, and understandable. Ismail and Kuppusamy (2022) identified several issues that make the websites of institutions of higher learning inaccessible. Among them are lack of colour contrast, lack of alternative texts for images, and poor link visibility, which are crucial for the digital inclusion of students with learning disabilities who experience challenges in processing visual information and understanding content (Dana & Christodoulides, 2020). Most importantly, websites must offer all the necessary information to help prospective and enrolled students understand the available disability support services including the types of disabilities they cater for, eligibility requirements, and required supporting documents. This information empowers students with learning disabilities to make informed decisions when considering whether to enrol in a particular university or a

disability support programme. Knowledge can be a powerful tool for empowerment since it provides people with the confidence, skills, and understanding needed to make informed decisions.

Information can be made perceivable by adopting the Universal Design for Learning (UDL) principles that encourage multiple means of representation, perception, and expression (Centre for Applied Special Technology, 2021; Nave, 2021). These principles create flexible learning environments that encourage diverse ways of participation and mastery, making learning more inclusive and impactful. For example, alternative text for images, charts, diagrams, and auditory information can be used to improve perception, interpretation, and comprehension (Nave, 2021).

In addition, signalling or well-crafted textual descriptions of key points, relationships and trends (Mayer, 2021), which can have auditory formats, can enhance accessibility and comprehension as noted by Robinson (2019). Several considerations should be made. For example, descriptions should be compatible with assistive technologies such as screen readers to reduce dependence on others when accessing information (Smith et al., 2020). The captioning of videos and transcripts for audio content, as recommended by Mayer (2021), addresses accessibility barriers for students with disabilities. In addition, texts should not be dense but clear with legible fonts that can be resized without breaking the layout. This is consistent with the findings of Matsuura and Jaeah (2020), which

underscore the importance of text clarity on accessibility and understandability for dyslexic people.

To ensure information is operable, it is critical that students can navigate and interact with content using various tools and devices. This recommendation aligns with WCAG on adaptability and compatibility with assistive technologies. Abbasi Kasani et al.'s (2020) study on e-learning challenges in Iran emphasises that educational information should not rely on specific hardware or software that is not user-friendly, too costly, outdated, or has limited options for compatibility with assistive technology. Ensuring technological accessibility across different platforms, including desktop computers, mobile devices, and emerging technologies, such as wearables or augmented reality devices, can widen access to information for students with diverse needs (Wentz et al., 2023).

Keyboard accessibility is also a matter of concern for students with disabilities (Baguma & Wolters, 2021), especially those with dysgraphia and dyspraxia who experience coordination and motor challenges that might impede the use of a mouse. Inclusive input devices such as touchscreens or virtual keyboards can reduce accessibility and usability difficulties for students with limited physical activity and coordination. Where the keyboard can be navigated using a mouse, functionalities should be accessible. Inaccessible functionalities hinder the proper navigation of web page menus. Chiou et al. (2021), on keyboard accessibility in web applications, emphasise the importance of pointand-click functions on web menus to enhance the user interface. Organising

content with clear menus, headings, and consistent structure simplifies navigation and promotes effective online learning, which is particularly important in ODeL settings where students often work independently (Moore & Piety, 2022). While keyboard accessibility and alternative input devices are crucial, there can be challenges in ensuring their seamless integration across platforms. For instance, there can be technical constraints where legacy systems and existing platforms do not support advanced accessibility features. It would require redesigns or updates, which can be costly and time-consuming. Also, alternative input devices, such as virtual keyboards, may not be equally intuitive or efficient for all users.

Furthermore, web platforms should include clear error messages and options to correct or resubmit forms without starting over again. Vague error messages can cause frustration for students with information-processing difficulties. On the whole, step-by-step guidelines, clear and concise messages, and predictable navigation patterns align with best practices for students with learning disabilities. Simplifying interfaces is important since overly complex designs can decrease engagement and hinder learning outcomes (Burgstahler, 2020). Given the reliance on online text in ODeL contexts, implementing these strategies can significantly improve the educational experiences of students with learning disabilities.

Notably, the timing of learning tasks should be adjustable to accommodate different processing needs. Most students with learning disabilities require

extended time to demonstrate their true abilities and complete tasks (Slaughter et al., 2022). The idea is to ensure that web platforms are designed inclusively for students with learning disabilities to access, understand, and interact with online platforms effectively. Web platforms should go beyond mere access to information or resources.

Strategies for Digital Inclusion Through Empowerment

Empowering students with learning disabilities and ODeL institutions to achieve full digital inclusion is important for a successful engagement with elearning. Effective strategies for digital inclusion involve a dual approach that focuses on both student and institutional empowerment to create sufficient conditions (Smith et al., 2018) that make learning meaningful for students with learning disabilities. These conditions can be internal (reflecting a student's inner strength, confidence, motivation, etc.) or external (arising from institutional support and resources). Arguably, empowerment can be personal, relational, and environmental (Baqutayan, 2024), making it possible to evaluate multiple factors that impact the digital inclusion of students with learning disabilities in ODeL.

Student empowerment encompasses personalised training tailored to individual students, skills development, and cultivating active participation to encourage students to take ownership of their educational activities. These aspects relate to the Capability Approach's concept of capability that emphasises creating enabling opportunities instrumental for the achievement of

valuable outcomes. Capabilities concern providing real opportunities that lead to meaningful achievements (Kimhur, 2020). Hence, ODeL institutions should avail the necessary resources needed to be fully inclusive and also capacitate students to navigate and thrive in the online learning environment. The following practical strategies can improve empowerment in relation to the digital inclusion of students with learning disabilities: digital literacy, personalised training, students' active participation or agency, and self-advocacy and voice.

Digital literacy plays a key role in this empowerment by equipping students with the necessary skills to effectively access information, engage with learning content, and use assistive technologies. Students must possess sufficient technical know-how and digital capital to have positive ODeL experiences. However, disparities in access to technologies and digital skills exist across settings. Students from resource-rich settings are often familiar with and confident in using technology for education (Seale, 2012). In contrast, those from low-income rural households may lack the necessary skills to navigate digital tools and access online information (Walker & Mathebula, 2020). A study on the computer literacy of South African university students found that 34% did not have computers at home, and among those who did have a computer at home, 45% had never used it (Blignaut et al., 2016). These findings highlight significant digital literacy gaps, which can cause barriers to full digital inclusion.

Comprehensive digital literacy training workshops can be conducted before the start of the academic programmes to ensure that students are

computer literate to reduce technical barriers. Foundational or beginner-level computer and internet use training for students with no prior experience is necessary. This training can assist students with typing and uploading assignments, emailing, internet browsing, file management, and other computer skills. Specific to disability, assistive technology training through hands-on tutorials is an essential empowering tool. Specialised training and technical support must be offered to promote the use and maximize the potential of assistive devices. Ongoing training is also important to reduce skill attrition over time and sustain empowerment. While the use of assistive technology itself is empowering for people with disabilities (Venkateswara et al., 2018), having the right skills to use assistive technology effectively is even more empowering since it promotes proficiency and independence.

Furthermore, context-specific training that focuses on digital tools and platforms used in the institution's learning management systems (LMS) is important. Since LMSs are instrumental in planning, implementing, evaluating learning, facilitating student interaction, giving performance feedback, and managing students' learning activities (Kasim & Khalid, 2016), it is important that they are user and disability friendly to improve the e-learning process. ODeL institutions are encouraged to develop inclusive video tutorials with step-bystep guides for easy navigation of LMS and self-paced learning. Students should have the confidence and technology self-efficacy to successfully interact with LMSs and e-learning (Robinson, 2019). However, Ferguson et al. (2019) highlight

that most higher education institutions, particularly in Africa, lag behind in establishing robust LMS with accessibility features that fully address students' unique needs. In addition, disparities in access to reliable internet and devices may limit the effectiveness of even well-designed LMS tutorials and training programmes. It is common to have students who are included in the digital learning systems but have limited digital engagement due to the digital divide.

Personalised training is necessary to create an environment where students can customise their learning experiences to fit their individual needs and preferences. This can involve adaptive learning technologies that adjust content and pacing based on students' learning styles. Genc and Kocdar (2020) suggest adjusting assessment conditions and offering alternative learning materials suited to the specific nature of each student's disability. This should be offered on top of the traditional student support that is educational, administrative, reflective (assistive and developmental guidance), technological (devices and software), administrative, affective (social, emotional, and practical) and systemic (policy) (Mir, 2017). Doing so ensures a holistic empowering support system that enhances academic success.

Students' active participation or agency empowers students with learning disabilities to have a sense of ownership in their own education. This is feasible when structures and conditions of learning afford students the freedom to address matters of concern. With empowerment bringing confidence and inner strength (Frediani et al., 2019), students, through proper training, can have

control over their learning and the means to pursue their educational goals. Agency is exercised in line with goals one values and involves having direct control over intervening factors that influence achievement or non-achievement of those goals (Alkire, 2008). This resonates with Kabeer's (2002) broader conception of agency, which encompasses not only observable actions but also the motivation, meaning, and purpose a person assigns to an activity that, for instance, reduces vulnerability.

Active participation also involves collaboration on projects. Students can form collaborations on projects, be involved in online discussions, and engage in interactive assignments that assist in forming a sense of ownership and agency. Online forums with threaded discussions can be created to help students with disabilities engage with other project members and thus promote digital inclusion. Asynchronous discussions with peers alleviate the pressure of immediate responses that many students with learning disabilities who experience challenges in processing speed and working memory struggle with (Moll et al., 2016). Allowing students to take their time to formulate and articulate thoughts creates an accommodating environment that enhances academic engagement and digital inclusion. Moreover, online interactive discussions with peers or tutors have the potential to make learning more motivating, enhance critical thinking, improve the quality of ideas, and improve learning outcomes.

Self-advocacy and voice are empowering for they enable students with learning disabilities to assert their needs and rights (Chambers, 2024). It can be

an effective tool against vulnerability and inequalities, and aligns with the Capability Approach's concept of democratic deliberation where students should have a platform and be comfortable to raise concerns and preferences. This involves creating a culture of openness that can encourage students to disclose learning disabilities and needs. Where possible, a disclaimer must be put in each lecture or communication with students that those who require disability-related support should be forthcoming for their learning needs to be addressed.

However, some students with learning disabilities struggle to effectively communicate their needs (Greathead et al., 2016). Empowering these students to advocate for themselves requires providing platforms where they can share concerns and feedback, and contribute to the development of policies and practices that address their needs. For example, students can be involved in decisions about the reasonable accommodations they receive instead of employing top-down approaches. Bottom-up approaches, which prioritise students' needs and preferences over predetermined university offerings, tend to address needs more effectively. Moran et al. (2017) stress the active involvement of students in determining support services instead of relying solely on expert recommendations. Therefore, empowerment is best understood not only in terms of providing services or resources but also in how well a person can function with the resources provided (Drydrik, 2017). In this sense, empowerment is more than delivering accommodations. It requires addressing

factors such as those listed below, which give students greater control and influence over their education:

- Decision-making power: Who determines the nature of accommodations?
- Responsiveness of support services: Do the disability support services address student's unique needs effectively?
- Access to information and skills: Does the student have the relevant information and skills to effectively use available tools and resources?
- Social environment: Is the academic setting conducive for a student to utilise disability support services?

Since empowerment is multifaceted and includes institutional empowerment, lecturers also need to be empowered to effectively teach students with learning disabilities. Providing comprehensive ongoing support and training for both new and experienced lecturers is crucial. This support should include proper follow-up on compliance with the recommended strategies for digital inclusion and accommodating students' unique needs. Effective training should cover key areas such as:

- Understanding learning disabilities and their impact on a student's learning experiences
- Utilising digital tools and resources to support students
- Implementing effective teaching strategies and methodologies to accommodate diverse learning needs

Experienced lecturers should also receive refresher training to stay up-todate with the latest developments in digital inclusion. For example, workshops that focus on new technologies, inclusive teaching practices, and case studies of successful implementation of digital inclusion for students with learning disabilities have been highlighted in the existing literature as effective in promoting sustainable teaching practices where lecturers can integrate accessible technologies into their teaching (Logan et al, 2020). Research has shown that educators and faculty who attend continuous professional development are more willing and better equipped to implement UDL principles, which recognise diversity and promote inclusion (Craig et al., 2022). This kind of empowerment enables lectures to overcome practical barriers, improves professional competency, and enables them to become change agents who are instrumental in transforming institutional practices to be more inclusive. These suggestions are consistent with research which emphasises the significance of training educators in inclusive practices to create equitable and empowering learning environments (Craig et al., 2022). However, comprehensive training programmes can be financially and logistically challenging, particularly in resource-constrained settings. In addition, challenges may arise where institutional cultures that prioritise tradition are respected more than innovation and progressive inclusive teaching practices.

Lecturers can be capacitated to present learning content in ways that students can perceive easily. The formats in which information is presented should take into consideration the processing challenges that learning disabilities pose to students, such as limiting clutter on learning materials to accommodate

dyslexic students. Relatedly, Terras et al. (2015) suggest that syllabi should have clear due dates, assignment expectations and course assignment directions, and assignments should be broken down into smaller and more frequent ones, rather than having intense ones that can overwhelm students with information processing and attention challenges. Interactive assignments, such as multimedia assignments, can allow students with learning disabilities to demonstrate their knowledge and skills in various formats and spare students from the challenges of traditional assignments that may not fully demonstrate their abilities. Using different digital tools to demonstrate knowledge and understanding sharpens students' digital skills that are useful in online learning environments.

Addressing these challenges promotes inclusivity in ODeL but requires a collaborative effort of students, lecturers, Information and Communication Technology experts, the student support department, faculty managers, and other relevant stakeholders to ensure that students with learning disabilities are not disadvantaged. It is important for curriculum managers responsible for planning, producing, and delivering courses to work closely with accessibility coordinators or disability support professionals and lecturers. This collaboration, which Moore-Cherry et al. (2016) refers to as inclusive and sustainable partnerships, ensures that students' accessibility and inclusion requirements are accounted for and that their needs are addressed accordingly. However, a concern arises from the potential disconnection between the services offered by the academic support team, which, in most cases, is aware of students'

disability-related needs, and the lecturers who deliver instruction (Pearson et al., 2019). Writing in the context of the Open University in the United Kingdom, Pearson et al. (2019) observed that this disconnection leads to students' needs not reaching faculty members who should implement instructional designs that effectively address students' disability-related needs. Mampaey (2017) refers to these gaps in practices and institutional commitments to inclusion as "decoupling." This decoupling, which is mostly influenced by resource limitations, lack of skills, and reluctance among policy implementers to act (Mampaey, 2017), disadvantages students. Even though effective collaborations are necessary to address students' challenges, engaging all relevant stakeholders can be challenging in large and decentralised settings that characterise ODeL. A lack of accountability mechanisms can also impact the effectiveness of institutional collaborations.

Possible Challenges to the Implementation of

Empowerment Strategies

While the outlined strategies for digital inclusion in ODeL offer significant potential for full digital inclusion through empowering students and ODeL institutions, their implementation can be challenging. A critical limitation lies in the variability of resources and infrastructure across institutions, particularly in low-income countries where internet access, funding, and technological infrastructure are often inadequate. For instance, adopting WCAG requires technical expertise and financial investment which may not be readily available in some contexts. Also, the operationalisation and implementation of UDL principles can be challenging. Concerns are raised that there is minimal best practice evidence and guidance on how UDL can be implemented in low- and middle-income countries, posing challenges to inclusivity in education (McKenzie et al., 2021). UDL offers an inclusive framework that demands substantial training for lecturers, technologists, educational administrators, and faculty managers to ensure that alternative formats, such as captions, transcripts, and text descriptions for graphics, are effectively and consistently provided. These processes of rolling out accessible content can be time-consuming and resource-intensive, posing barriers to its effective implementation (Hills et al., 2022).

In addition, ensuring cross-platform accessibility can have compatibility challenges. As Abbasi Kasani et al. (2020) highlight, reliance on specific hardware or software can exclude students who do not have access to these resources. The rapid technological changes may also outpace the ability of institutions to maintain updated and compatible systems, resulting in accessibility gaps.

Furthermore, apart from the digital divide where students fail to access personal devices and internet connection, they may face social challenges where they can be stigmatised for reliance on assistive devices and reasonable accommodations. In addition, the lack of physical interaction in ODeL can limit

access to peer or mentor support that improves student engagement and success. Students may also face challenges in getting immediate support, academic assistance, or emotional guidance due to geographical separation. In addition, students' agency and self-advocacy may be difficult to practice since learning disabilities can affect the self-confidence and communication skills needed to articulate needs and seek appropriate support.

Conclusion

In conclusion, the integration of technology and pedagogy in ODeL is commendable since it expands learning opportunities to many who face challenges in accessing traditional educational settings due to geographical, financial, or personal constraints, including those with learning disabilities. Institutions should strike a balance between technological innovation and human support to ensure that students with learning disabilities are digitally included in ODeL settings. The nature of support should not only focus on access but ought to be empowering and situate students at the centre of developments that aim to address their unique needs. It is crucial to understand empowerment as something more than just access to resources but as giving students the power to actively participate in decision-making processes, shape their own learning experiences, and develop the skills and confidence necessary to overcome technological challenges and attain their academic goals. True empowerment should cultivate a sense of agency and self-efficacy where students with learning disabilities have control over their learning, support processes, and learning outcomes. The study underscores the need to create not just accessible environments but also empowering experiences that equip these students to participate and succeed in ODeL—a digital educational environment. Further research could investigate how specific digital tools and inclusive pedagogical practices contribute to the empowerment of students with learning disabilities in ODeL.

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