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INCLUSIVE EDUCATION: HOW TO UPGRADE FROM A "TECHNOLOGY PORTER" TO A "DEMAND TRANSLATOR"

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Abstract

This article adopts a comprehensive definition of disability, encompassing physical, sensory, mobility, and cognitive impairments, and extends the definition of technology to include various forms of online learning (both distance and blended), assistive technologies (AT) such as screen readers and alternative keyboards, general-purpose technologies like tablets and mobile phones, administrative applications including registration systems, social networking applications, and application-specific technologies such as statistical software.

Over the past decade, technological advancements have progressed at a rapid pace, presenting both benefits and challenges for students with disabilities. On one hand, technology has the potential to assist individuals with disabilities in managing the complexities associated with their conditions, thereby facilitating social integration. Conversely, the adverse effects of technological shortcomings on disability education are often overlooked. This article investigates the interplay between technology and disability education through a qualitative study focused on this subject. The primary research question seeks to understand how technology can enhance the self-perception and educational experiences of individuals with disabilities, rather than merely serving as a means to accommodate their disabilities. The study aims to explore the perceptions, beliefs, and experiences of both disabled learners and educators regarding technology, assess their attitudes towards the implementation of specific technologies in educational contexts, and identify factors that may either hinder or promote inclusive education for individuals with disabilities. The article aspires to delineate a proactive approach to inclusive education for individuals with disabilities by analyzing the following four key points:

1. How can convenient technology be made widely accessible to ensure equal participation of all individuals with disabilities in social life?

2. De-standardization: In what ways can individuals with disabilities be empowered to exert control over technology? This control entails the ability to engage with technology at their discretion and to make as many independent decisions as possible, thereby fostering a sense of autonomy and independence that connects them to the broader community rather than isolating them.
3. Professional development for educators: How can technology be utilized to assist educators in evolving from mere "technical porters" to "demand translators," enabling them to provide more customized support for students with disabilities rather than adopting a mechanical approach?
4. Addressing emotional and practical needs: How can educators prioritize emotional and practical considerations in their support of individuals with disabilities, utilizing technology as a tool to address genuine needs rather than allowing technology to overshadow the human element of education?

Keywords: Inclusive education, control technology, "demand translator," genuine needs

INTRODUCTION

This article adopts a comprehensive definition of disability, encompassing physical, sensory, mobility, and cognitive impairments, and extends the definition of technology to include various forms of online learning (both distance and blended), assistive technologies (AT) such as screen readers and alternative keyboards, general-purpose technologies like tablets and mobile phones, administrative applications including registration systems, social networking applications, and application-specific technologies such as statistical software.

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evolving from mere "technical porters" to "demand translators," enabling them to provide more customized support for students with disabilities rather than adopting a mechanical approach?

4. Addressing emotional and practical needs: How can educators prioritize emotional and practical considerations in their support of individuals with disabilities, utilizing technology as a tool to address genuine needs rather than allowing technology to overshadow the human element of education?

BACKGROUND

The advent of technologies such as ChatGPT and Deep Seek, which are capable of autonomously generating lesson plans, grading assignments, and assessing the emotional needs of students with disabilities, offers intriguing perspectives on reimagining the concept of the body. However, these technologies fall short in elucidating the interplay between various body types—particularly those that diverge from conventional notions of "normality"—and technological advancements. The human representations depicted in these contexts are predominantly characterized as free from illness or physical impairments. Within the framework of technological culture, it is often posited that "technical bodies are healthy, enhanced, and fully functional." This raises critical questions regarding the actual benefits of these technologies: do they exclusively serve individuals without adverse effects? Furthermore, do students with disabilities experience seamless social integration through the utilization of these technologies? It is imperative to consider what measures must be taken, particularly in developing nations that grapple with significant disparities between affluent and impoverished populations and face profound structural challenges, to transition from being mere "technology porters" to becoming "demand translators." This shift is essential for effectively addressing the implications of technology in the context of inclusive education.

LITERATURE REVIEW

The mechanical nature of technology management and the flexibility and practicality of on-demand matching

Porter and Towell (2013) assert that the identified deficiencies in educational systems can be interpreted as manifestations of systemic contradictions that undermine well-intentioned efforts. They illustrate this point by noting that while collaborative learning among students is possible, initiatives aimed at fostering inclusion often disproportionately emphasize additional support for students labeled as "special," rather than creating an environment conducive to individualized learning for all students. Furthermore, Porter and Towell (2013) argue that achieving inclusive education necessitates comprehensive reforms within the public education system, ensuring that inclusivity is embedded as a fundamental aspect of policy, culture, and practice, extending from the classroom to the Ministry of Education, and becoming a core expectation within the communities surrounding schools.

Aldabas (2021) conducted a study examining special education teachers' perceptions regarding the barriers and facilitators associated with the use of augmentative and alternative communication (AAC) for students with multiple disabilities. The findings revealed that the school environment emerged as the most significant barrier, overshadowing factors related to teacher skills and student

characteristics. Notably, female teachers demonstrated a greater awareness than their male counterparts regarding the impact of their own knowledge and skills as barriers.

McNicholl et al. (2021) found that assistive technology can yield educational, psychological, and social advantages within the field of social work. However, they caution that users of assistive technology, as well as assistive technology officers, must recognize that certain challenges—such as inadequate training in assistive technology, insufficient equipment, limited availability of external support, and difficulties in navigating multiple sources of information—can impede the effective utilization of assistive technology, thereby restricting participation in higher education contexts. They advocate for future practices in assistive technology to focus on harnessing the capabilities of mainstream devices as assistive tools for all students, thereby fostering inclusion and mitigating stigma.

Tamakloe (2020) discusses the quality of early intervention practices and the practical role of assistive technology in achieving effective outcomes, drawing on Vygotsky's cultural-historical theory. The discussion includes a rationale for early intervention services, an overview of current legislative frameworks and emerging practices, and an application of Vygotsky's theory to delineate the roles of teachers, children, therapists, and parents in the selection and utilization of assistive technology.

Explore how technology contributes to the meaning and experience of the lived body/self of people with disabilities

Green, S. E., & Loseke, D. R. (Eds.). (2019) utilize the DSE paradigm (Ware, 2017) to analyze intersectional disability narratives. The paper investigates five key areas: (1) the influence of prevailing narratives on the self-construction of disability identities; (2) the ways in which disabled women of color challenge dominant narratives and affirm their dignity; (3) the emotional ramifications of the learning disability label at the intersection of language, race, emotion, communication, and privilege; (4) the expression of liberatory practices in narratives co-created with DSE students; and (5) the forms of epistemic violence present in higher education institutions when the DSE paradigm is at odds with conventional special education frameworks. The authors pose critical questions regarding the relationship between disability and narrative inquiry, as well as the lived experiences of disabled individuals who shape dominant disability narratives across various cultural contexts.

Moriña, A., Perera, V. H., & Carballo, R. (2020) conduct an analysis of the training needs of academic staff from their perspective to facilitate inclusive education for students with disabilities. The findings are organized around three primary themes: the profile of academics based on their prior training, the significance of such training for them, and the essential content of the training deemed necessary. The conclusion emphasizes the imperative for universities to develop and implement comprehensive training policies. Furthermore, participants expressed that enhanced training on disability-related issues would lead to greater sensitivity and preparedness. A salient conclusion of this study is that fostering an inclusive university environment necessitates the active participation of all stakeholders.

Breaking the hegemony of technology and implementing inclusive education

In their 2019 study, Trybus, M. J., Breneman, D. L., and Gravett, E. O. examine the potential contributions of a disability studies perspective to the field of educational development, with the aim of challenging prevailing technological hegemony. The authors seek to delineate this significant area of

inquiry, deconstruct prevalent misconceptions surrounding disability, and reveal instances of ableism embedded within standard educational development practices. The research culminates in a series of recommendations for inclusion, informed by the authors' personal experiences, professional expertise, and existing literature on disability.

Negative impact of technology on education

In the analysis conducted by Trybus, M. J., Breneman, D. L., and Gravett, E. O. (2019), it was determined that cooperative learning did not correlate with favorable peer attitudes. Affective mediators have the capacity to transmit both positive and negative emotions towards attitude objects (Clore and Schnall, 2005), and it is anticipated that the majority of the effects of interpersonal contact will manifest within the affective dimension of attitudes. However, it is noteworthy that a limited number of the studies reviewed concentrated on this affective component. Additionally, the review revealed a surprising absence of research investigating the mediating influence of peer attitudes. Numerous scholars have posited that negative peer attitudes constitute a significant obstacle to social engagement for students with disabilities, a notion that has been corroborated by several empirical studies. Nonetheless, there remains a paucity of evidence regarding the mediating role of attitudes within intervention contexts.

Furthermore, Brittles, B. (2020) identified that educators specializing in special educational needs and disabilities (SEND) are particularly vulnerable to experiencing elevated levels of stress and burnout (Chang, 2009). These educators reported greater instances of exhaustion and depersonalization compared to their mainstream counterparts (Kucuksuleymanoglu, 2011). This situation is concerning, as 39% of teachers transitioning from special education to general education cited burnout as the primary reason for their departure (Billingsley & Cross, 1991).

Research Gap

Despite the abundance of literature addressing technology and special inclusion education, significant research gaps persist. Specifically, there is a scarcity of articles authored by disabled students themselves, as well as a limited number of studies focusing on the involvement of disabled students in assessments. Furthermore, there is a dearth of research examining the differential treatment of international disabled students compared to their local counterparts. Additionally, there is a lack of scholarly work addressing the practical challenges that arise from technological advancements, which often obscure underlying structural issues.

These observations indicate that existing literature on inclusive education through technology tends to overlook the subjective experiences of students with disabilities. Instead, it predominantly emphasizes broad macro-level research, thereby neglecting the nuanced micro-narratives that are essential for a comprehensive understanding of the subject.

METHODOLOGY AND METHODS

Methodology

The methodology employed in this study is phenomenological methodology, which serves to investigate the ways in which individuals conceptualize their experiences beyond a dualistic framework (Marton and Pang, 2008). This approach emphasizes particular aspects of reality, specifically the content of thoughts or experiences that are perceived, conceptualized, or "experienced" (Marton, 1981, p. 189). Within this framework, the phenomenological method is utilized to examine how individuals' experiences influence and transform their responses to various phenomena, and how these observable responses can be systematically represented as an outcome space. Phenomenology posits that learning is fundamentally linked to changes in specific dimensions, reflecting the structure and organization of consciousness (Marton and Pang, 2008). Furthermore, as Tight (2018) discusses in his review of phenomenological research since the 1980s, "the basic assumption of phenomenological researchers is that for any given phenomenon of interest, there are only a limited number of ways to perceive, understand, or experience it" (p. 18).

Methods

This article uses participant observation to explore the relationship between inclusive education and disability, transcending the perspectives of medicine and special education (SPED) on disability issues, combining personal experience (the author is a PhD student with physical disabilities) and participant observation methods to conduct a qualitative analysis of this phenomenon and put forward practical suggestions. Participant observation is a data generation method widely used in social sciences and humanities. The observation part of this method requires the participating researcher to pay extensive attention to what is happening. As mentioned in the background above, as a participant and researcher with physical disabilities, I sometimes participate in research as a research participant and research object, and sometimes as a researcher. Due to this intersectional identity, participant observation is more convenient for me, both in academia and in the disability community. This in-depth observation allows me to challenge traditional views and perspectives.

DISCUSSION

In summary, empirical studies have provided different evidence on the opportunities and challenges that digital technology brings to people with disabilities. The impact of technology on disability is a double-edged sword (Chib and Jiang 2014). How to truly use technology to make inclusive education for people with disabilities more effective requires multidimensional analysis.

How can we make technology more accessible to everyone so that everyone can participate equally in social life?

Effective communication

Effective communication is a fundamental component of classroom learning, serving as the primary medium for instruction, meaning-making, and the sharing and demonstration of knowledge and skills (Kathard, Pillay, & Pillay, 2015). While technological interventions can positively impact the education

of students with disabilities, the presence of communication barriers prior to the implementation of such technology, or the tendency of non-disabled educators to prioritize technological solutions over the needs of disabled students, can lead to an underestimation of these students' potential and hinder the realization of inclusive education. For instance, in the case of students with hearing impairments, technology can facilitate self-expression through speech; however, some educators may inadvertently reinforce a sense of inferiority in hearing-impaired students by allowing their peers to "assist" them, which can discourage these students from communicating and articulating their needs. Furthermore, the linguistic environment in which hearing-impaired students are raised, along with their use of sign language, often results in a word order that differs significantly from that of spoken language. If hearing educators rely solely on technology without fostering effective communication and understanding, they may develop "arrogant prejudices," perceiving hearing impairment as synonymous with unclear expression, obstinacy, or emotional abnormality.

Piggy, an individual with hearing impairment who utilizes spoken language, shared her experiences during her secondary education: "I am capable of using spoken language; however, I rely on hearing aids for assistance. While the majority of teachers are accommodating, there are instances where certain educators mistakenly perceive my hearing aids as headphones and prohibit their use in the classroom. Furthermore, it is important to note that sign language differs significantly from conventional written language. For instance, the phrase 'the world cannot exist without puppies' is conveyed in sign language in the same manner. Some educators, particularly those outside the realm of special education, tend to assume that individuals with hearing impairments face challenges solely in communication, without considering the underlying reasons for these difficulties."

Consequently, with regard to communication, it is imperative to:

- Acknowledge the rights of students with disabilities: It is essential to affirm that students with disabilities possess the right to select their preferred mode of communication.
- Inquire of participants whenever feasible: Throughout the communication process, it is important to solicit information regarding the specific needs and preferences of students with disabilities.

Demand support - technology feeds back demand

There are valid concerns regarding the potential for digital technologies to perpetuate the structural inequalities experienced by individuals with disabilities (Macdonald and Clayton, 2013; Goggin and Newell, 2003). However, if these inequalities are accepted without incorporating the perspectives of students with disabilities and their unique individual and collective experiences, their agency and capacity to utilize technology in ways that facilitate their adaptation to transitions and other facets of daily life may be overlooked. Students with disabilities, akin to their non-disabled counterparts, are not merely passive recipients; they actively engage with digital technology, reaping its benefits while also confronting associated risks and challenges (Pacheco and Melhuish, 2018). Given the heterogeneity and individual differences among students with disabilities, it is evident that a uniform set of technologies may not be appropriate for all. This necessitates a focus on the specific needs of individuals with disabilities and a responsive approach to technology development.
To address these issues, the following measures are recommended:

- Provision of free trial software: Once technology has been developed, it should be made available for a trial period at no cost to students with disabilities, allowing for an assessment of its adaptability.
- Inclusion of students with disabilities in discussions surrounding diversity and inclusion: It is imperative to adhere to the principle of "nothing about us without us," recognizing that decisions regarding technology, which is inherently a specialized field, should not be made for students with disabilities in a generalized manner.

Furthermore, the social stratification among disabled populations is often more pronounced than the disparities within the disabled community itself. Addressing the technological access gap that arises from socioeconomic disparities among disabled students is a critical concern. While some educational institutions offer computer rental programs for economically disadvantaged students, concerns regarding liability for potential damage to the equipment can deter participation, rendering such initiatives less effective. Therefore, it is essential for technology providers and educators to collaborate in developing solutions that do not exacerbate existing structural inequalities.

De-standardization: How to make technology controllable for people with disabilities

Control is defined as the capacity to engage in activities at the discretion of individuals with disabilities, allowing them to make a maximum number of decisions independently, without necessitating the involvement of others. Technologies that foster a sense of control and autonomy are fundamentally linked to the participants' understanding of independence. Furthermore, these technologies facilitate connections for individuals with disabilities to the broader societal context, thereby reducing the likelihood of social isolation.

Bibi, an individual with learning disabilities, articulated the following: "During my time in school, I disclosed my learning disabilities; however, the educators who were receptive to my situation primarily offered me text-based course materials or permitted me to record lectures. They perceived my challenges as a need to simply decelerate and engage more attentively, neglecting the fact that I also experienced difficulties with reading and required specific assistive technologies. Conversely, other educators who were unwilling to engage with me believed that I was feigning my condition to obtain undue advantages. They exhibited a lack of trust in my assertions."

Narrative capital encompasses a profound engagement with psychological introspection and a focus on subjectivity. In particular, it necessitates that disabled students have the opportunity to disclose their disabilities through various secure channels. This allows individuals with disabilities to articulate their experiences, including those related to hidden disabilities, without the fear of facing discrimination or judgment. Consequently, this approach enables them to effectively communicate their technological needs, gather diverse textual resources, and contribute to the development of an inclusive educational database.

Training professional teachers

The preparation of educators specializing in inclusive education extends beyond the mere integration of technology in alignment with curricular frameworks. It also encompasses the development of these professionals from mere "technology porters" to "demand translators." This transformation enables educators to customize their teaching approaches for individuals with disabilities, rather than adhering to a rigid, mechanical instructional model. Achieving this objective necessitates two key components:

1. Fundamental technical guidance.
2. Awareness guidance and oversight.

In the absence of intentional guidance and oversight, technical training may be perceived as a burden by many educators, leading them to inadvertently transmit negative sentiments to their students. Despite advancements in technology, the awareness and understanding of certain educators have not evolved correspondingly. For instance, students within the Department of Educational Psychology at the author's institution have been reported to directly insult their disabled peers, stating, "You deserve to be disabled," and engaging in bullying behaviors from a position of perceived superiority. In such instances, the application of technology in inclusive education should primarily target the educators rather than the students. It is imperative to implement specific technological strategies that empower disabled students to utilize technology for evidence collection and to mitigate legal risks associated with exposing such inappropriate behaviors by educators. Educational institutions should enforce appropriate disciplinary measures commensurate with the severity of the incidents.

How to deal with emotions and needs

In the endeavor to support individuals with disabilities in their development, educators should prioritize values that extend beyond mere rationality. It is essential to utilize technology as a supplementary tool rather than allowing it to take precedence. This approach will more effectively address the genuine needs of individuals with disabilities.

Dayan, a career counselor, observed that "nearly all students from special education institutions who approach us for internship opportunities possess intellectual disabilities. However, we have identified that the educational programs they receive are predominantly mechanical and standardized, lacking the personalized approach necessary to accommodate the unique diversity inherent in each individual's intellectual disability. While we acknowledge the significant workload and inadequate compensation faced by special education teachers in mainland China, it is evident that these factors are detrimental to the advancement of individuals with mental disabilities." In an effort to challenge the dominance of technological approaches, Trybus, M. J., Breneman, D. L., and Gravett, E. O. (2019) elucidated the valuable insights that disability research can contribute to educational development. This study aims to delineate this critical area of research, dismantle prevailing misconceptions surrounding disability, and expose the presence of ableism within the prevalent practices of educational development. Drawing from personal experiences, professional domains, and literature related to disability, the authors propose several inclusive recommendations. Based on their embodied experiences, the authors suggest various enhancements:

- Engage with professional organizations. The issue of supporting individuals with disabilities in

their development is a long-term concern. The personal experiences of educators alone are inadequate; therefore, it is essential for them to participate in professional organizations to enhance their knowledge and resources.

- Offer educational developers opportunities for ongoing education and reflection on disability issues. It is advisable to structure courses around the concept of "disability time," which allows for flexibility within the conventional time constraints (e.g., providing more than 15 minutes between classes, as noted by Price, 2014, p. 62). However, it is important to recognize that each student with a disability is unique, necessitating the creation of a "disability time" database informed by comprehensive research and dialogue with the specific needs of disabled students.
- Develop specialized courses focused on disability topics, such as teacher learning communities, and connect these initiatives to teacher performance evaluations.
- Rather than solely relying on disability experts and researchers, it is more beneficial to engage directly with disabled students. The principle of "nothing about us without us" emphasizes that disabled students are the foremost authorities on their own experiences and can provide valuable insights into their needs and feelings.
- Advocate for institutions to appoint inclusion and accessibility coordinators for faculty and staff. While it is important to involve experts, it is equally crucial to incorporate the perspectives of disabled students in these discussions.

CONCLUSION

Suggestion

In the discourse presented in this article, the author delineates seven essential steps for effectively integrating technology within the framework of inclusive education:

1. Conduct a comprehensive assessment to ascertain the needs of students with disabilities.
   When selecting technological tools, it is imperative to consider the preferred communication methods of students with disabilities, investigate their actual technological requirements, and involve these students in the design of surveys or interviews regarding technology usage.

2. Facilitate training on the utilization of pertinent technologies for both students and educators with disabilities.
   It has been observed that some educators may possess less technological proficiency than their students and may rely on outdated instructional materials. To enhance educational outcomes, it is crucial for educators engaged in inclusive education to undergo rigorous technical training, ideally mandated and linked to their performance evaluations. If such training is merely optional, many educators may adopt a lax approach, thereby neglecting their responsibilities towards students with disabilities.

   For educators lacking prior exposure to relevant training programs in inclusive education, it is advisable to provide foundational education and scenario-based simulations to familiarize them with the effective use of technology in addressing the inclusive educational needs of students with disabilities. For those educators with some experience, it is beneficial to encourage the use of social platforms to document challenges and inquiries encountered,

thereby establishing a collaborative problem-solving group. This group can facilitate the public sharing of specific experiences and questions, allowing knowledgeable individuals within the group to provide responses and contribute to the creation of a repository of experiences for the benefit of other educators.

3. Implement the technology within the educational framework and create a comprehensive database for technology utilization.
    - Following the development of the technology, it is imperative to provide students with disabilities the opportunity to utilize it at no cost for a designated period, allowing for the assessment of its adaptability.
    - It is essential to ensure the continuous involvement of students with disabilities in discussions surrounding diversity and inclusion, adhering to the principle that "without us, there is no us." This is crucial, as decisions regarding technology, which is a highly specialized field, should not be made without the input of the affected student population.
    - Develop a professional database to archive the content generated from these discussions, which may encompass various formats such as text, images, audio recordings, and videos, for the benefit of other relevant stakeholders.

4. Appoint an inclusive/accessibility coordinator to address complex issues within the database.
   In instances of miscommunication or discord between students with disabilities or between these students and faculty members, it may be beneficial to engage an inclusive/accessibility coordinator with practical experience to facilitate resolution. However, it is vital that the voices of students with disabilities are not marginalized in this process, as all technological solutions should serve as tools to enhance their learning and living experiences, emphasizing a "people-oriented" approach.

5. Implement regular feedback surveys regarding the utilization of technology
   It is essential for both students with disabilities and faculty members to provide their insights and perspectives following a designated period of technology use. This reflection should consider whether the discrimination faced by individuals with disabilities, as experienced by educators and future educators working with these students, can be internalized and reinterpreted within the context of disability narratives. Furthermore, it is important to examine which values, behaviors, and narratives will be conveyed to students with disabilities who are training to become educators and will subsequently engage with this population.

6. Develop an appropriate system of supervision, rewards, and penalties
   It is imperative to establish a mechanism that correlates specific outcomes from the application of technology with corresponding rewards or penalties for teaching staff.

7. Engage with professional organizations to exchange and learn from collective experiences
   As previously noted, the topic of "supporting the growth of individuals with disabilities" is an ongoing concern. The personal experiences of educators alone are insufficient; therefore, it is crucial for them to participate in professional organizations to enhance their knowledge base

and continuously refine their experiences.

Limitations

This article exhibits specific regional characteristics, as the author's interviews predominantly focus on mainland China and do not encompass a comprehensive range of regions.

The integration of inclusive education and technology should focus on examining the interplay between human connection, localized understanding, and the experience of the present moment—elements that technology cannot replicate. It is imperative to critically engage with the concept of "society," which encompasses "relationships," "ethics," "emotions," "power dynamics," "resource distribution," and considerations of both the "present" and "future." While technology serves as an effective tool for knowledge acquisition and logical reasoning, inclusive education transcends mere technological application. Educators must leverage technology as a supportive resource while also engaging in deeper reflection and innovative inquiry regarding educational paradigms, positioning, and significance. This approach aims to move beyond technological dominance and genuinely address the needs of students with disabilities, evolving from mere "technology implementers" to "translators of demand."

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