

Placing inclusive education in conversation with digital education

Nazir Carrim^a , Tanya Bekker^a 

^a Wits School of Education, University of the Witwatersrand, 27 St Andrews Road, Johannesburg, South Africa.

ABSTRACT

This article places inclusive education in conversation with digital education, and it does so for two reasons. The first reason is that the increased use of digital education will need to be inclusive and should not result in increasing inequalities. The second reason is that the experience within inclusive education provides valuable insights which could benefit the development of digital education. This article is conceptually based, and its aim is to show how experiences in inclusive education could benefit the development of digital education and vice versa. It argues that like inclusive education, the increased use of digital education in the future will require a redefinition and revisioning of education. While policies and legislation as well as training in digital education are important, this article recommends that digital education will need to engage with the deep-seated values, beliefs and assumptions held by teachers, students, parents, and society at large, and will require careful attention being paid to the systematic organisation of online learning in terms of curriculum, pedagogy, and assessment just as inclusive education.

Keywords: Inclusive education, digital technologies, digital education, inclusive online learning

Categories: • *Applied computing* ~ *Education, E-learning*

Email:

Nazir Carrim nazir.carrim@wits.ac.za,
Tanya Bekker tanya.bekker@wits.ac.za

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1 INTRODUCTION

This article brings inclusive education into conversation with digital education. It does so based on the premise that like inclusive education, digital education challenges traditional pedagogy. Like inclusive education, digital education will also require a redefinition and revisioning of education. The developments in inclusive education and digital education have followed different paths, and the experiences of inclusive education such as those related to arguing for reconfiguring educational systems and practices, addressing norms and assumptions of school-based actors, in policies, curricula and school practices, and calling for a shift in traditional pedagogies, resonate with the kind of challenges facing digital education. Inclusive education and digital education appear to challenge traditional pedagogies and educational

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systems, and digital education could benefit from the experiences in inclusive education in its experiences of such a challenge. A conversation between them could prove to be productive and assist in moving to a future that is based on inclusivity.

The COVID-19 pandemic has brought to the surface the stark inequalities across the world. Such inequalities include the lack of basic facilities in schools and in communities. These several levels of interlocking inequalities have also revealed the vast disparities that exist within and across schools, where mainly private schools who are better resourced have access to digital technologies and who were able to move to online teaching and learning, while other, mainly public schools, are unresourced and do not have access to or even prior exposure to digital technologies. Such disparities in schools are multiplied when viewed on a global scale. These issues which relate to educational inequalities, and wider inequalities, have been covered extensively in recent reports and scholarly publications on the effects of the pandemic (Badroodien & Fataar, 2020; Vaughn et al., 2021). The material and structural inequalities made more visible by the pandemic, also significantly revealed the layers of challenges facing the (increased) use of digital technologies in education. It is these challenges of using digital technologies and increasing their use in education that is the focus in this article.

The article locates itself in inclusive education for two major reasons. First, whatever the future of education may use, it cannot increase inequalities in societies and in education. Future educational provisions need to increase inclusivity and should allow for equal access to education in every part of the world, so that “no child is left behind” and as Negroponte (2018) rephrased this, “no child left offline”. From an inclusive education perspective, not leaving any child “behind” or “offline” is important for the realisation of every child’s right to access education as a human right.

Second, and from an inclusive education perspective, increasing learners’ participation and engagement in their schooling is not only about formal access but also to ensure they meaningfully develop the knowledge, skills, and values to enhance their participation in society. Increasing the use of digital technologies in education is more than giving a laptop to every child, as Negroponte (2018) argues, or about access to data and connectivity. It also includes careful attention being given to the design of the curriculum, the pedagogies used, the type of assessments required (Bekker & Carrim, 2021), and, significantly about the assumptions and beliefs of teachers and students in schools and in communities. Digital education, we suggest, can also aid in developing more differentiated curricula, assessments, and pedagogies in inclusive ways.

This article first outlines the approach of inclusive education adopted in this article. It briefly traces the debates between the special education and social model approaches to inclusive education. Slee’s (2011, pp.158–161) four propositions regarding inclusive education of “redefining, revisioning, re-righting, re-searching” education are also discussed. The second part of this article argues that one of the key issues that influence discussions in inclusive education are the assumptions and beliefs about what constitutes the ‘normal’. These assumptions and beliefs are at once about what constitutes the ‘normal’ in relation to dis/ability, and normative assumptions in societies of what is viewed as the ‘normal’. The argument that is put

forward in this article is that the pandemic has raised serious questions about the ‘normal’ in the increasing speak about a ‘new normal’ that all people need to prepare for the future. The ‘new normal’ puts into place significant challenges related to shifting from traditional pedagogy.

The article also shows that teachers general responses to the use of differentiated pedagogies and universal design of learning (Liasidou, 2012) have indicated that keeping the ‘normal’ intact has been the most significant of the responses of teachers to using more differentiated approaches to their teaching and the tendency to homogenise students in the ways assessments are done, curriculum delivered and how differences among students are dealt with. How digital technologies in inclusive education have been used is also discussed to indicate that using digital technologies in inclusive education have been more marginal and not central to inclusive education. We indicate these to show that whilst digital education can assist in the development of more differentiated pedagogies, digital education will also need to address the resistance to move to more differentiated forms of pedagogy

The third section of this article focuses attention on the challenges that need to be recognised in the increased use of digital technologies in education. It is recommended that the future use of digital technology in education is not only about increasing access to and familiarity with digital technology in education. It is also about engaging with the assumptions and beliefs held by teachers and students about what constitutes the ‘normal’; how holding onto traditional pedagogy is linked to teachers views of their professional identities and competency; and how using digital technologies in education could lead to more differentiated pedagogical designs and strategies to further the development of inclusive education.

This article argues that digital technologies in education offer productive engagement with more differentiated pedagogies. It also emphasises that careful systematic design of curriculum content to enhance student engagement and participation with content to allow for deep knowledge development is crucial in teacher-student, student-student, teacher-content, and student-content interactions. In this regard, Slee’s (2011) propositions of “revisioning” and “redefining” education are argued to be pertinent as well.

2 INCLUSIVITY AND INCLUSIVE EDUCATION

Inclusive education in the South African educational system is informed by the Department of Education’s White Paper Six (2001). It is also informed by the National Education Policy Act (NEPA, 1996), which provides the basic framework of education in post-apartheid South Africa. NEPA (1996) also indicates that its purpose is to operationalise principles of the Constitution of South Africa (Constitution, 1996) in education. The Constitution indicates in its Preamble that the aim of the Constitution is to “heal the divisions of the past and establish a society based on democratic values, social justice and fundamental human rights” (Constitution, 1996, p.1). As such inclusivity is a principle in the South African educational system and linked to the Constitution of South Africa, both of which recognise inclusivity to “heal the divisions of the past” (Constitution, 1996, p.1) and the segregation and discrimination which

characterised it. Inclusivity, thus, is wider in its meaning and encapsulates the aspiration to develop an “anti-racist, anti-sexist and democratic South Africa” which is founded on the values of “democracy, social justice and human rights” (Constitution, 1996, p.1).

This article uses inclusivity to mean the need for recognition of all people based on human rights and social justice, following on the NEPA Act and the Constitution of South Africa (Constitution, 1996; NEPA, 1996). It views inclusive education as being more specific to provisions in education which will aid in the development of such an inclusive society. This distinction is also supported by the Salamanca Statement of 1994 in which it is stated “regular schools with this inclusive orientation are the most effective means of combating discriminatory attitudes, creating welcoming communities, building an inclusive society and achieving education for all” (UNESCO, 1994, p.1). In this Statement one notes that “inclusive education” is viewed as “building an inclusive society”. The reach of meaning of inclusivity, then, is wider than inclusive education which focuses specifically on schooling and education.

2.1 Approaches to Inclusive Education

Inclusive education, however, has been conceptualised historically in different ways. Oliver and Barnes (2010) provide a review of the historical developments in the field of inclusive education. They outline that a continuing point of tension in the field has been between the special education approach and the social model approach to inclusive education. This tension has been about views of people with disabilities or impairments and where and how they should be schooled. The special education approach, Oliver and Barnes (2010) note, has tended to view people with disabilities as having inherent deficits and who need medical treatment, they also tend to view disabled people being schooled separately from mainstream schooling in ‘special schools’. This is also noted in White Paper Six (2001).

The social model approach has pointed out that such a deficit, medicalised approach to understanding people with disabilities leads to exclusion of people with disabilities. The advocates of the social model approach to inclusive education argue that such approaches reinforce the hegemonic dominance of views of people and society as ‘normal’ and fails to acknowledge both the inadequacies of so called ‘normal’ people and the abilities and potential that disabled people still possess despite being disabled in some respects. At the same time, the special education approach, does not acknowledge the many layers of discriminations and inequalities in societies which bolster social orders as only being made up by and for so-called ‘normal’ people.

Oliver and Barnes (2010) also outline that there are different points of emphases and approaches used by people in the social model approach of inclusive education, which they also indicate has led to lack of conceptual clarity and focus in the field of inclusive education. To avoid getting into the intricacies of these debates, this article locates itself in the social model approach to inclusive education, and assumes that all people, with or without disabilities, should have access to education. It also recognises that social orders themselves need to be viewed critically since the assumptions of normativity dominant in society reinforce forms of

exclusion and discrimination, be it in terms of ability, race, class, gender, or other forms of categorisation. It also notes that schooling systems need to be reformed and improved so that exclusionary practices and assumptions are not what characterise schools or the experiences of those who are within their confines.

Located also in the social model approach to inclusive education, Slee (2011, pp.158–161) notes the historical developments in the field of inclusive education and puts forward four propositions: “re-visioning, re-righting, redefining, re-searching” education .

Given that “(ir)regular schooling” (Slee, 2011) is one that operates with assumptions of the ‘normal’ and is viewed for ‘regular’ children (read able-bodied) to fit into ‘regular’ society, all processes, and relations in ‘regular schools’ reproduce not only the ‘regular’, but also reproduce inequalities especially in relation to race, class, and gender (Greenstein, 2016; Lingard & Mills, 2007). Regular schools are not inclusive spaces, and neither are the societies they reproduce. Hence, the need to “re-vision” education. The language assumed and used in ‘regular schools’ express the descriptions of the ‘other’ as ‘retarded’, ‘abnormal’, ‘slow’, ‘stupid’, ‘useless’, ‘deficient’, and ‘lacking’. It should be noted here that such language generally gets to be used to refer to people with disabilities but has also been used in relation to black people, women, the poor, and people with different sexual orientations. Hence, for Slee (2011), the need to “re-right” the language used in education.

Regarding “redefining” education, Slee (2011) indicates that what the role of education is, what it is meant to serve, and how it is structured and, in whose interests, needs to be relooked at and redefined in ways that are based on inclusivity, inclusive societies, and inclusive education.

Slee (2011) also notes that research in education tends to be done by those who are not affected by what is researched. For example, adults conducting research on children without allowing or recognising the participation of children themselves in the research (Clark, 2005). As another example, able-bodied people conducting research on disabled people without having any sense of what the disabled actually experience (Allan & Slee, 2008). The importance of allowing people about whom research is conducted, to inform and participate in such research is what is indicated by Slee’s fourth proposition about “re-searching” education.

This article draws on two of Slee’s (2011) propositions: re-visioning and redefining education. The (increased) use of digital technologies in education will require a redefinition of education and a re-visioning of education. The increased use of digital technologies in education will require attention being paid to the kind of issues raised in inclusive education, and which have been captured in White Paper Six (2001), and the Salamanca Statement (UNESCO, 1994). These issues include curriculum flexibility, school management, recruitment and training of educational personnel, community participation, resource provisioning, partnerships with other organisations, and establishment of enabling inclusive policy and legislative frameworks. The last issue, that is policy and legislative frameworks, are in place. Apart from White Paper Six (2001) and the Screening, Identification, Assessment and Support (SIAS) policy (SIAS, 2014) the South African educational system has also put into place policies to promote the increased use of digital technologies in teaching and learning in schools such as

the White Paper on e-Education (2004), and the Professional Development Framework for Digital Learning (Department of Education, 2018) with curriculum changes which now include subjects like robotics and coding to develop skills needed for participation in a digitalised society. The policy and legislative framework, thus, will not be discussed in this article. Instead, what will be shown is that despite such policy and legislative frameworks being in place, there is a lot to be desired in relation to how much is being implemented in practice.

3 BELIEFS, DIGITAL TECHNOLOGIES IN INCLUSIVE EDUCATION, AND DIFFERENTIATED PEDAGOGIES

The importance of recognising the impact teachers and students' beliefs and assumptions have on educational practices and relations cannot be emphasised sufficiently. The assumptions and beliefs about what are 'normal' have profound consequences in education specifically.

In education, the 'normal' is assumed to be what is ordinary and regular. This in turn means that people are able-bodied and with equal propensity to learn and do things in the same way. Regular schools assume all students in schools go through the same physical, cognitive, and emotional developments. Teachers are also trained to believe that they are being trained to teach such regular, 'normal', able bodied people. Depending on context, these assumptions are also raced, classed, and gendered, where, for example, teaching white, heterosexual boys from middle class nuclear families is taken for granted as what is normal and who the teacher is trained to teach. These, however, have been discussed extensively in the literature on inclusive education which indicated that such beliefs and assumptions are one of the significant factors that frustrate the implementation of inclusive education policy and legislative frameworks. Engelbrecht et al. (2016) has shown that despite the Constitution (1996), NEPA (1996), White Paper Six (2001), and SIAS (2014) being in place, teachers, learners and parents continue to view inclusive education in special education terms and see disability as that which is not 'normal' and disabled students to be taught in segregated, special schools. Teachers also felt that they were trained to teach normal students, and do not feel that they are trained to teach disabled students. The teachers felt that disabled students needed specialised medical, psychiatric, and counselling help which they could not give. This was also noted by Evans and Lunt (2002) in their research with educational personnel in England and Wales. Also noted by Engelbrecht et al. (2016), is that such views were also held by district officials who are tasked to train and support teachers in developing inclusive education. Engelbrecht et al. also indicate that such assumptions are part of the cultural beliefs of the communities in which the schools are located too. Raveaud's (2005) research on inclusive education in England and France similarly found that the cultural beliefs in wider society inform the way teachers and students assume what is 'normal' in schools.

In this article and in the current context, the 'normal' is also assumed to mean traditional pedagogies and assumptions about teaching and learning. Traditional pedagogy in this article is used to refer simply to face-face teaching and learning. The 'new normal' is assumed to be

disruptive of traditional pedagogies and traditional assumptions of what teaching and learning should look like and do. It is unsurprising, then, for teachers and students to claim online teaching and learning does not feel 'normal'. The online teaching and learning experience, thus, disrupts both the sense of what the teacher thinks s/he should be doing, and the students' sense of what schooling should be. Such assumptions about what constitutes 'normal' teaching and learning are not only linked to assumptions of traditional pedagogy, but also linked to wider societal assumptions about what the affordances and possibilities of digital technologies (in education) may be and what schooling means.

The increased use of digital technologies in education, then, cannot be assumed to be disconnected from teachers' and students' beliefs about what they understand teaching and learning to be. Teachers and students assume that 'normal' schooling happens in a space called the school. The 'normal' regular school is a physical space, and teaching and learning is a physical interaction which uses material objects.

Shifting to increased use of digital technologies in education will require a shift in the cultural assumptions of what schools are and what schooling is about among teachers, students, parents, and society at large. This is not to suggest that increasing the use of digital technologies will necessarily entail the decrease of schooling in physical buildings. However, the intervention of digital technologies in education shifts the traditional 'normal' way of schooling, and where and when teaching and learning happens. This shift indicates a move in the spatial and temporal senses of what schooling means, and what teaching and learning means, and consequently what being a teacher and student means. The shift from the 'normal' to the 'new normal' entails a cultural shift which resonates with the cultural shifts from special education to more social model approaches in inclusive education. In relation to Slee's (2011) propositions, the increased use of digital technologies in education will require a revisioning and a redefinition of education.

3.1 Digital Technologies in Inclusive Education

The argument thus far in this article is that increased use of digital technologies in education is not only about increasing access to and increasing training in the use of digital technologies in education. Viewed from an inclusive education approach, increasing the use of digital technologies in education will require a redefinition and revisioning of education, and will need to engage with the deep level assumptions held by teachers, students, parents, and society at large about 'normal' schooling. Increasing the use of digital technologies in education will not be able to avoid or ignore the deep-level cultural shifts that will be required in the shift to a more digitalised 'new normal'.

3.2 Digital Technologies and Disorderly Behaviour

There are two ways in which digital technologies have been used in special education. First, in relation to debates about attention deficit hyperactivity disorder (ADHD) the influence of

student's exposure to digital technologies has been viewed as "disruptive" (Graham, 2008, p.1) and contributing to ADHD. The second, is the use of digital technologies as "assistive devices" to increase access to education for people with disabilities or impairments.

Graham (2008) notes that in addressing ADHD difficulties experienced by teachers and students in schools has been the view that the "disruptive behaviour" of students with ADHD is viewed by many as being influenced, if not caused, by digital technologies. Graham (2008, p.2) indicates:

Media discussion of ADHD, which informs much of popular discourse on the subject, revolves mainly around the possible causes of disruptive, disorderly behaviour. The usual suspects – too much television and video games, food additives, aberrant maternal-child interactions, inconsistent parenting, lack of discipline, single mothers, and temperamental disposition – are trotted out periodically, amid panicked interviews with the "experts" of child behaviour; pediatricians, psychologists, and psychiatrists.

As can be seen from this quotation, although socio-economic factors and home backgrounds are noted, "television and video games" are viewed as "causing disruptive, disorderly behaviour". Television and video games have also now been expanded to include use of smart-phones, being on social media platforms and incessantly taking and posting 'selfies'. From this, one notes that a link is indicated between disruptive behaviour and digital technologies. Digital technologies in education are, thus, viewed in negative ways, and disruptive of 'normal' schooling and behaviour. What is also important to note is that this view is not only held in schools but promoted in "media discussions". The cultural assumptions of what digital technologies are considered as should be noted here too.

3.3 Assistive Devices

The second area in which digital technologies have been used in inclusive education has also been in special education. Digital technologies have been used to increase access for disabled people in education, mainly people who are hard of hearing or visually impaired. These, however, have been viewed more in terms of being 'assistive devices' and do not entirely include the range of digital technologies.

Assistive technology has been defined as, "any item, piece of equipment or product system, whether acquired commercially off the shelf, modified or customised, that is used to increase, maintain or improve functional capabilities of individuals with disabilities, or to prevent impairments, activity limitations or participation restrictions" (Visser et al., 2020, p.11). This definition suggests that assistive technology refers primarily to products, the purpose of which are to increase capabilities and participation of individuals with disabilities (Ndlovu et al., 2021). These types of descriptions and definitions of assistive technology point to the fact that assistive technology is linked primarily to the notion of increasing capabilities and functionality of people with disabilities thus situating the use of assistive technology quite firmly in relation to special education support provisioning.

It cannot be ignored that specific impairments may result in challenges related to physical and sensory functionality and that provisioning of assistive devices and technology to navigate physical and social environments that may otherwise be inaccessible is of clear and unarguable importance. International conventions have recognised access to assistive technology as a human right, in for example, the Convention on the Rights of Persons with Disabilities (United Nations, 2006) and in the Sustainable Development Goals 2030 (United Nations, 2015). South African education policy references assistive devices and technology in the SIAS policy (SIAS, 2014) as well as in the Guidelines to Ensure Quality Education and Support in Special Schools and Special School Resource Centers (Department of Education, 2014). It must be noted however that there is an implicit assumption in the positioning of reference to assistive devices in policy specific to disability and special education. This constructs the use of assistive technology in 'special ways' for special needs of use primarily in accommodating people with disabilities suggesting a need for normalisation with inherent implications of ableism (Ndlovu et al., 2021). This discounts the potential of assistive technology as a component of digital technology to move beyond individual accommodation to principled inclusion for diversity. It also does not fully recognise the broader conceptualisation of assistive devices including Information Communications Technologies, as indicated in the latest Strategic Disability Policy Framework (DHET, 2018) as tools for broadening access generally not only for learners with disabilities in the educational setting. This suggests that how assistive technologies have been used in inclusive education and in cases where such technologies are made available, has been marginal and not central to inclusive education.

3.4 Differentiated Pedagogies

The most significant of teachers' general responses to the use of 'differentiated pedagogies' and 'universal design for learning' has been about keeping the 'normal' intact. This type of response, where teachers revert to traditional pedagogies to maintain the 'normal', continues to homogenise students in ability groups rather than responding in differentiated ways to support learner difference in ways that do not marginalise or reduce content but rather increase participation and alternative pathways for engaging with key content, activities, and assessments. Traditional pedagogical approaches tend to be the most used approaches in classrooms but were not conceived to be responsive to diversity as they are geared to teaching the envisaged 'normal' and 'average' learner in the 'normal' mainstream classroom on the assumption that those with needs considered outside the norm would be educated separately in special education classes. This section covers approaches to inclusive pedagogy that are responsive to diversity, including Universal Design for Learning (UDL); the Inclusive Pedagogical Approach in Action (IPAA) framework; and Differentiated Instruction (DI).

UDL refers to a way of thinking and planning for teaching that considers how a wide variety of leaning needs may be met in learning interactions to plan for access to ways of working with knowledge for everyone from the onset. UDL recognises that the way individuals learn differs.

The Inclusive Pedagogical Approach in Action (IPAA) framework is underpinned by three key principles identified by Florian and Spratt (2013). The first of these principles is that difference must be accounted for as an essential aspect of human development in any conceptualisation of learning. Secondly teachers must believe they can teach all learners, including learners with special educational needs, which requires a shift from thinking that learning difficulties are problems located within the learner to seeing learning difficulties as a professional challenge. This supports the responsiveness and accountability of teachers to and for the learning of all rather than seeing such challenges as being beyond the scope of the 'mainstream' teacher. Continual professional learning and developing new strategies for working with others is the third of the principles identified by Florian and Spratt (2013) to support enactment of inclusive pedagogy.

Differentiated instruction refers to, "pedagogical techniques used in the classroom to deliver appropriately designed curriculum to a wide range of learners" (Loreman et al., 2010, p.141) and affords teachers the opportunity to avoid the one size fits all traditional approach and instead ensures that all students are engaged with core content and concepts for a particular lesson at varying levels of complexity. Differentiated instruction is intended to offer alternatives to the traditional pedagogical approach in extending ways in which students are enabled to work with knowledge, with each other and with the teacher allowing for multiple arrangements of teacher-knowledge, student-knowledge, student-student, and student-teacher interactions. UDL, IPAA principles and differentiated instruction all point to approaches to differentiated and responsive pedagogies that offer opportunities to ensure multiple means of engagement and allow the flexibility to plan for varying levels of scaffolding, support, self-regulation, engagement with content, assessment opportunities and feedback.

Despite these affordances however, to date teachers still tend to revert to traditional pedagogies. This may be partially explained by what Walton and Lloyd (2012) discuss as challenges associated with change. Change requires transitioning from comfortable and familiar practices and taken for granted assumptions and ways of thinking, to those which may feel unfamiliar and uncomfortable with the resultant challenges of thinking about things differently impacting on teachers own sense of professional identity, agency, beliefs, and ways of doing things. Resistance to change, the tendency to teach as one was taught, and anxiety about efficacy for meeting new demands have also been highlighted as challenges associated with change (Lewis, 2014; Qhobela, 2012). Rouse (2009) argues that many teachers struggle to implement inclusive pedagogy because they have not been supported in developing the knowledge and skills required to do so and that this results in teachers holding negative rather than positive attitudes to moving away from a reliance on traditional pedagogy. A study done by Ammah and Hodge in 2005, indicated that wavering beliefs compounded by the complexity of inclusive practice and resultant lack of confidence meant that teachers tended to avoid embracing inclusive pedagogy (Ammah & Hodge, 2005). Moriarty (2007) found that significant barriers to willingness to adopt inclusive pedagogy included the lack of an inclusive mindset which points to beliefs and ways of thinking that do not support inclusive practice and a lack of knowledge about inclusive pedagogy resulting in maintaining the known status quo. The

use of traditional pedagogy is still entrenched.

Loreman (2017) also argues that inclusive pedagogy in practice still tends to be derived from special education practice in the way UDL is used. What tends to be seen in practice is that teachers revert to using differentiated instruction to provide separate and segregated learning pathways for learners based on ability groupings that are usually seen to be fixed and unchanging reinforcing deep level assumptions about 'normal' and 'normal schooling'. Traditional deterministic views of ability that are underpinned by the belief that ability is pre-determined and fixed are likely to result in what Florian and Walton (2017) describe as 'bell-curve thinking' which assumes that most learners are average with a few on the extreme ends of the bell-curve that require something different to the others suggesting that lessons should be pitched to the average, as that would suit the majority of the class.

Similar challenges associated with change in adopting inclusive pedagogies are found in adopting the use of digital technology. In much the same way as teacher efficacy for inclusive practice was found to be a barrier, Dolighan and Owen (2021, p.98) reference a range of studies that suggest, "teacher beliefs and self-efficacy as a primary barrier to using technology in education". It is necessary therefore to consider teacher beliefs and efficacy in relation to addressing resistance to shifting from traditional approaches to more inclusive and differentiated pedagogies as well as to incorporating digital technology in education. Digital technology should not be positioned as something outside of inclusive pedagogy and practice but recognised for its potential to enhance inclusive practice.

In a study conducted by Bekker and Carrim (2021) about university education lecturers' perceptions of moving to online teaching and learning it is also indicated that the tendency to stick to traditional pedagogy was as high as 53% of university teachers who kept their course content the same as what was used in face-to-face contact teaching and learning. For the 47% of lecturers who indicated that there had been changes in content these were related primarily to reduction in content. No changes that referenced adopting different or extended pedagogies were noted. Thus, university lecturers also did not shift from traditional pedagogical styles and to consider doing things in more differentiated ways using the digital technologies that were available to them. Bekker and Carrim (2021) also indicated that there was little evidence to suggest that university teachers did, to a significant degree, reconceptualise and redesign the structure, design, or assessments used in the course.

As such, although digital education provides affordances for more differentiated pedagogies, it will need to also address the resistance to shifting from traditional pedagogy as the experiences in inclusive education indicate.

4 RECOMMENDATIONS FOR INCLUSIVE EDUCATION AND DIGITAL TECHNOLOGIES IN THE FUTURE

This article has indicated that redefining and revisioning education to increase the use of digital technologies will entail addressing issues which include curriculum flexibility, school

management, recruitment and training of educational personnel, community participation, resource provisioning, partnerships with other organisations, and establishment of enabling inclusive policy and legislative framework. As also indicated earlier, these are noted in the Salamanca Statement (UNESCO, 1994) and White Paper Six (2001) in South Africa. In the following section three recommendations are explored to suggest what will need to be addressed for increasing the use of digital technologies in education. These three recommendations are: beliefs and assumptions; the framing of the teacher and student; and systematic organisation of curriculum design.

However, before proceeding with these three recommendations, the following needs to be emphasised. Increased use of digital technologies in education will not be inclusive if the structural inequalities and inequalities in provision of educational resources and personnel are not considered. Digital education can reproduce such inequalities if basic access to digital technologies do not exist, as experiences under the pandemic have indicated. Inclusivity and/or inclusive education in the increased use of digital technologies in education will not be possible if it is not viewed as necessary for the 'Education for All', a point made clearly in inclusive education.

It also follows that if teachers and students, all of whom should have access to digital technologies, do not know what digital technologies are or how to use them, then the increasing use of digital technologies will not be possible. Training in the use of digital technologies, thus, will be crucial and will need to use all resources possible, including entering various levels of partnerships with inside and outside of education actors, as well in private-public partnerships.

4.1 Shifting Beliefs and Assumptions

The beliefs and assumptions held by teachers, students, parents, and society at large about what education is, what it does and for whom, are all couched ideologically in ways that promote assumptions of the 'normal', traditional pedagogy and traditional views of what teachers and students are and do. These are deep-level assumptions and are linked to the orders and hegemonic constructions in society. Moving from such orders and constructions will require a redefinition and revisioning of education and society. Assumptions and beliefs about the 'normal', traditional pedagogy, who the teacher and students are and what they do and what education should be for all need to be recognised. In this regard, race, gender, class, ability, regional location, age, inter alia, will need to be recognised as well. If increasing the use of digital technologies in the future is to aid and promote inclusivity, then such interlocking forms of inequalities cannot be ignored.

4.2 Framing of the Teacher and Student

Linked to beliefs and assumptions held by teachers, students and society at large is the need to redefine and revision who and what the teacher and the student are, and what they can do

differently need to be explored too. The beliefs that teachers are repositories of knowledge has been shattered by the amount of information on the internet which show that teachers are in fact limited in what they know, and that information can be accessed quite easily without the teacher. Equally, the idea that students are mere receptacles of knowledge, and come into schools to fill their 'empty heads' is also shown in current times to be mistaken and indicate that students are creative, innovative, and amazingly adept at finding new ways of doing and learning things, also with the use of technologies. These "banking methods" (Freire, 1972) of traditional pedagogy will need to be redefined and revisioned. The increasing use of digital technologies will need to view teachers and students as co-creators of knowledge as both engage with 'new' ways of teaching and learning using digital technologies. This entails, at the same time, a redefinition and revisioning of the professional identities of teachers. This is complex because it is also about the training teachers receive, the assumptions of what professional practice in education in the future may mean, as well as the conditions of work of teachers, and the proletarianisation, re/deskilling (Ozga & Lawn, 1988) of teachers that a move to increasing use of digital technologies in education will imply.

4.3 Systematic Organisation of Curriculum Design

The increasing use of digital technologies in education will require more than training in the use of digital technologies. Training in technology use does not equate with the requirements of systematically (re)designing curricula in terms of content, pedagogy, and assessment. The systematic organisation of teaching and learning using digital technologies will need to pay serious attention to the extent to which deep learning and deep knowledge development which allow independent and critical learning is enabled. This includes careful selection of content used, the structuring of scaffolded tasks and activities which encourage student engagement with the content, allow for collaboration among students with the content, and link such content and activities to student's own level and pace of learning in differentiated ways so that students' own engagement with the content links up with their own experiences and contexts. The assessments used also need to be redefined and revisioned to allow for more differentiated assessment forms and which do not rely on mere regurgitation of the content but assess the extent of knowledge and skill development in application and solving of problems. Inclusive education has demonstrated that if curriculum, pedagogy, and assessment are not considered then inclusive education remain unimplemented. Inclusive education has shown this by noting that training teachers in policies and procedures of inclusive education, which would be like training teachers in digital technology use, does not equip teachers adequately or sufficiently with what they need to do to make their curricula, pedagogy, and assessments more inclusive.

5 CONCLUSION

The aim of this article has been to put inclusive education into conversation with digital education. It has done so on the premise that like inclusive education, digital education will necessitate a redefinition and revisioning of education. This due to the realisation which emerged in experiences in inclusive education which indicate that it is insufficient to only make school-based actors aware of what is contained in policy and legislative framework or to only emphasise the training of teachers in either digital education or inclusive education. It recommended that assumptions and beliefs about what teaching, learning, and schooling entails, and for whom it is constructed are profound and need to be considered when engaging with forms of education that requires shifts in the identities and practices of teachers, students, and schools. It has also been recommended that curriculum, pedagogies, and assessments used in digital education will need to be given serious attention if digital education is to enable deep learning to occur in teacher-student, teacher-content, student-content, and student-student interactions.

References

- Allan, J., & Slee, R. (2008). *Doing inclusive education research* [Ch.1 & 2]. Brill. <https://doi.org/10.1163/9789087904197>
- Ammah, J. O. A., & Hodge, S. R. (2005). Secondary physical education teachers' beliefs and practices in teaching students with severe disabilities: A descriptive analysis. *The High School Journal*, 89(2), 40–54. <https://doi.org/10.1353/HSJ.2005.0019>
- Badroodien, A., & Fataar, A. (2020). Special issue: Emergent educational imaginaries during the Covid-19 pandemic. *Southern African Review of Education*, 26(1), 1–197. <https://journals.co.za/doi/abs/10.10520/ejc-sare-v26-n1-a1>
- Bekker, T., & Carrim, N. (2021). Education lecturers' perceptions of organising systematic online teaching and learning during COVID-19 pandemic conditions in 2020 at two selected universities in South Africa. *Journal of Education (University of KwaZulu-Natal)*, 48–66. <https://doi.org/10.17159/2520-9868/I84A03>
- Clark, A. (2005). Listening to and involving young children: A review of research and practice. *Early Child Development and Care*, 175(6), 489–505. <https://doi.org/10.1080/03004430500131288>
- Constitution. (1996). Constitution of the Republic of South Africa (Act 108 of 1996). <https://www.gov.za/sites/default/files/images/a108-96.pdf>
- Department of Education. (2014). Guidelines to ensure quality education and support in special schools and special school resource centres. <https://www.education.gov.za/LinkClick.aspx?fileticket=gtT7f77sYdU%3D&tabid=617&portalid=0&mid=2372>
- Department of Education. (2018). Professional development framework for digital learning. <https://www.education.gov.za/Portals/0/Documents/Publications/Digital%20Learning%20Framework.pdf>

- DHET. (2018). Strategic disability policy framework in the post-school education and training system [Accessed: 14 February 2022]. <https://www.dhet.gov.za/SiteAssets/Gazettes/Approved%20Strategic%20Disability%20Policy%20Framework%20Layout220518.pdf>
- Dolighan, T., & Owen, M. (2021). Teacher efficacy for online teaching during the COVID-19 pandemic. *Brock Education Journal*, 30(1), 95–95. <https://doi.org/10.26522/BROCKED.V30I1.851>
- Engelbrecht, P., Nel, M., Smit, S., & van Deventer, M. (2016). The idealism of education policies and the realities in schools: The implementation of inclusive education in South Africa. *International Journal of Inclusive Education*, 20(5), 520–535. <https://doi.org/10.1080/13603116.2015.1095250>
- Evans, J., & Lunt, I. (2002). Inclusive education: Are there limits? *European Journal of Special Needs Education*, 17(1), 1–14. <https://doi.org/10.1080/08856250110098980>
- Florian, L., & Spratt, J. (2013). Enacting inclusion: A framework for interrogating inclusive practice. *European Journal of Special Needs Education*, 28(2), 119–135. <https://doi.org/10.1080/08856257.2013.778111>
- Florian, L., & Walton, E. (2017). Inclusive pedagogy within the Southern African context. In P. Engelbrecht & L. Green (Eds.), *Responding to the challenges of inclusive education in Southern Africa* (2nd ed., pp. 167–180). Pretoria: Van Schaik Publishers.
- Freire, P. (1972). *Pedagogy of the oppressed*. London: Sheed & Ward.
- Graham, L. J. (2008). From ABCs to ADHD: The role of schooling in the construction of behaviour disorder and production of disorderly objects. *International Journal of Inclusive Education*, 12(1), 7–33. <https://doi.org/10.1080/13603110701683311>
- Greenstein, A. (2016). *Radical inclusive education*. Hove: Routledge.
- Lewis, G. M. (2014). Implementing a reform-oriented pedagogy: Challenges for novice secondary mathematics teachers. *Mathematics Education Research Journal*, 26, 399–419. <https://doi.org/10.1007/S13394-013-0092-5>
- Liasidou, A. (2012). *Inclusive education, politics, and policymaking*. London: Continuum.
- Lingard, B., & Mills, M. (2007). Pedagogies making a difference: Issues of social justice and inclusion. *International Journal of Inclusive Education*, 11(3), 233–244. <https://doi.org/10.1080/13603110701237472>
- Loreman, T., Deppeler, J., & Harvey, D. (2010). *Inclusive education: Supporting diversity in the classroom* (2nd ed.). UK: Routledge.
- Loreman, T. (2017). Pedagogy for inclusive education [Accessed: 16 October 2021]. *Oxford Research Encyclopedia of Education*. <https://doi.org/10.1093/acrefore/9780190264093.013.148>
- Moriarty, M. A. (2007). Inclusive pedagogy: Teaching methodologies to reach diverse learners in science instruction. *Equity & Excellence in Education*, 40(3), 252–265. <https://doi.org/10.1080/10665680701434353>
- Ndlovu, S., Mont, D., Cote, A., Mcconkey, R., Tchounwou, P. B., & Mazrui, A. (2021). Provision of assistive technology for students with disabilities in South African higher education.

- International Journal of Environmental Research and Public Health*, 18(8), 3892. <https://doi.org/10.3390/IJERPH18083892>
- Negroponte, N. (2018). No child left offline the fast interview: MIT Professor Nicholas Negroponte on Intel's "dishonesty" and the long, tough road to the \$100 laptop. Interview with Kermit Pattison [Accessed: 30 January 2022]. <https://www.fastcompany.com/641161/no-child-left-offline>
- NEPA. (1996). The National Education Policy Act (Act 27 Of 1996), Republic of South Africa. https://www.gov.za/sites/default/files/gcis_document/201409/act27of1996.pdf
- Oliver, M., & Barnes, C. (2010). Disability studies, disabled people and the struggle for inclusion. *British Journal of Sociology of Education*, 31(5). <https://doi.org/10.1080/01425692.2010.500088>
- Ozga, J., & Lawn, M. (1988). Schoolwork: Interpreting the labour process of teaching. *British Journal of Sociology of Education*, 9(3), 323–336. <https://doi.org/10.1080/014256980090305>
- Qhobela, M. (2012). Using argumentation as a strategy of promoting talking science in a physics classroom: What are some of the challenges? *US-China Education Review*, B2, 163–172.
- Raveaud, M. (2005). Hares, tortoises and the social construction of the pupil: Differentiated learning in French and English primary schools. *British Educational Research Journal*, 31(4), 459–479. <https://doi.org/10.1080/01411920500148697>
- Rouse, M. (2009). Developing inclusive practice: A role for teachers and teacher education. *Education in the North*, 16, 6–13. <https://www.abdn.ac.uk/education/research/eitn/journal/46>
- SIAS. (2014). Policy on screening, identification, assessment and support. <https://wcedonline.westerncape.gov.za/Specialised-ed/documents/SIAS-2014.pdf>
- Slee, R. (2011). *The irregular school: Exclusion, schooling and inclusive education*. Taylor; Francis. <https://doi.org/10.4324/9780203831564>
- UNESCO. (1994). The Salamanca statement and framework for action on special needs education. <https://unesdoc.unesco.org/ark:/48223/pf0000098427>
- United Nations. (2006). The convention on the rights of persons with disabilities (CRPD). <https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities.html>
- United Nations. (2015). Sustainable development goals 2030 [Accessed: 14 February 2022]. <https://undocs.org/en/A/RES/70/1>
- Vaughn, M., Sayed, Y., & Cooper, A. (2021). Special issue on interlocking inequalities, conflicts, and crises: Covid-19 and education in the global south. *Journal of Education*, 84(1), 1–227. <https://journals.ukzn.ac.za/index.php/joe/issue/view/144>
- Visser, M. A., Nel, M., De Klerk, M., Ganzevoort, A., Hubble, C., Liebenberg, A., Snyman, M., & Young, M. (2020). The use of assistive technology in classroom activities for learners with motor impairments at a special school in South Africa. *South African Journal of*

Occupational Therapy, 50, 11–22. http://www.scielo.org.za/scielo.php?script=sci_arttext&pid=S2310-38332020000200003

Walton, E., & Lloyd, G. (2012). From clinic to classroom: A model of teacher education for inclusion. *Perspectives in Education*, 30(2), 62–70. <https://scholar.ufs.ac.za/handle/11660/3575>

White Paper on e-Education. (2004). White paper on e-education: Transforming learning and teaching through information and communication technologies. https://www.gov.za/sites/default/files/gcis_document/201409/267341.pdf

White Paper Six. (2001). *Education WHITE PAPER SIX: Special needs education – Building an inclusive education and training system* [Department of Education]. https://www.gov.za/sites/default/files/gcis_document/201409/educ61.pdf