Developing inclusive digital pedagogies. Reflections on the past, the present and future directions.

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Abstract. Disabled children's experiences of using digital technologies in mainstream classrooms are very mixed. On the one hand, children's rights and digital rights legislation and inclusive education policies have promoted inclusive and equitable pedagogical practices for decades. Digital technologies are becoming increasingly prevalent in homes and schools, a phenomena rapidly accelerated by the global Covid-19 pandemic. Despite this positive rhetoric, the reality on the ground is that inclusive digital pedagogies – that prevent disabled children experiencing exclusionary educational practices in mainstream classrooms – are underdeveloped and require significant research and development. Current uses of digital technologies by disabled children, harnessing accessibility features in mobile technologies, can focus attention on their differences. Digital technologies in classrooms generally are often used in mundane ways which do not make the most of opportunities for creativity, collaboration and student-centred learning. This chapter reflects on the situation in the past and present in relation to the impact of disability studies, children's rights, policies on inclusive education and, digital technology developments and educational practices, on the development of inclusive digital pedagogies. It concludes by outlining early findings from a research project carried out in North West England that identifies challenges in relation to the development and implementation of inclusive digital pedagogies.

1 Introduction

Inclusive education and digital use practices have a great deal in common in their lack of realisable promise. Inclusive education has a disappointing legacy in mainstream schools. Typically, disabled children and young people are integrated but then experience ongoing exclusionary practices. These compromise the positive values of inclusion within the very environments expected to welcome and support them. Likewise, digital use practices - children's uses of digital technologies to support formal learning - have frequently been integrated into schools but not well embedded into pedagogy, often replicating learning practices in mundane, uncreative ways. This situation has formed a stark comparison to the more exciting and innovative uses and experiences outside of school including at home. The implications of the impact of the pandemic on

digital practices and inclusion in the longer-term remain to be seen following the shift to emergency remote learning then subsequent re-entry into schools. This means that we are at a fulcrum, a critical and potentially transformational moment in time, for reflecting on and learning from the past; taking stock of the current; and making recommendations to build more innovative, effective and inclusive digital pedagogies in future. Keeping this in mind, this chapter will introduce disabled children's childhood studies perspectives to situate this chapter at the intersection of disability studies and digital education. It will reflect on the past via the development of disabled children's practices in mainstream schools in the context of children's rights and inclusive education over the last four decades alongside development of inclusive (digital) pedagogies. Secondly, it will explore the current situation in the context of the newly introduced children's digital rights amendment; the apparent emerging trends towards the development of inclusive (digital) pedagogies; the opportunities provided by mobile technologies; and the potential opportunities triggered by the pandemic. Third, it will consider future directions and conclude that more research and development is needed. In light of this, it will introduce early findings from a current project with teachers to develop effective inclusive digital pedagogies to support disabled children and young people's digital use practices to learn post-pandemic in inclusive education settings. By bringing these perspectives together, we will be able to provide a platform to consider how best to support disabled children with digital technologies within inclusive educational environments in the future.

2 Disabled children's childhood studies and digital education

This chapter is written from a disabled children's childhood studies perspective drawn from Disability Studies and founded on three main principles: a) disabled children should not be automatically conflated with impairment and vulnerability; b) disabled children's voices should be placed at the centre of research designs; c) an agenda for change is essential given the need to challenge the authority of the 'norm' [1]. The first author has adapted the principles in relation to disabled children's digital use practices [2] as follows: i) digital activities should enable all children in the class to learn; ii) disabled children should have the same opportunities to benefit from digital use practices as their non-disabled peers; (iii) digital use practices should be inclusive, not intensifying differences between children or creating stigma; (d) class teachers should be supported to develop inclusive digital pedagogies; (e) research should explore and develop disabled children's digital use practices to enhance their learning and their lives more generally. Reluctantly, the term 'SEND,' to describe children with special educational needs and disabilities is used in the chapter to reflect its dominant currency in policy and schools while recognizing that associations with being 'special' and having 'need' [3] are more aligned to the medical than the social model.

3 Reflecting on the past: developing inclusive (digital) pedagogies

3.1 Children and human rights legislation

Human rights legislation underpinned the shift to inclusive education. In particular, the UN Convention on the Rights of the Child (UN CRC) [4] was instrumental in supporting children's rights. Article [2] of the (UN CRC) stated that all children have the right 'to receive education without discrimination on any grounds' [4, p.14]. This was reinforced by the UN Convention on the Rights of Persons with Disabilities (UN CRPD) [5], emphasised within Goal 4 of the United Nations "Sustainable Development Goals" with the intention being to "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" [6].

3.2 Inclusive education

The driver for global inclusive education since the 1990s has been the Salamanca statement [7]. It sought to distil human rights legislation into practice by urging each country to develop a comprehensive educational strategy that emphasised 'special needs education.' It was argued that 'ordinary' schools needed to be reformed given their importance to include: 'everybody, celebrate differences, support learning, and respond to individual needs. As such, they [schools] constitute an important contribution to the agenda for achieving Education for All and for making schools educationally more effective' (p. iii). The Salamanca statement was integrated into many countries' educational policy, oft seen as a mechanism for promoting social justice and improving society as a whole via access to education in high-income countries within Europe, Australasia and North America.

In practice, the impact of inclusive education has been disappointing. Taking the UK as an illustration, policy introduced in 1978 specified that disabled children should be educated 'wherever possible' within mainstream settings [8,9]. This was followed by the SEN [Special educational needs] Code of Practice [10]; the Social Exclusion Task Force [11]; the Children and Families Bill [12]. Yet, successive governments, researchers and activists have consistently identified failures in implementation. Inclusion in schools remains underdeveloped reflecting integration rather than inclusion [13]. Schools have been unable to develop an inclusive ethos whereby inclusion is recognised and embedded in all aspects of activity. The role of the teacher is key to this but instead of planning inclusive lessons, many class teachers do not design lessons from the outset that take 'primary responsibility' for the disabled children and young people in their classes [14]. Instead, disabled children are frequently stigmatised and marginalised, denying their independent access to the curriculum. Teaching assistants and other support staff are relied on to "'bridg[e]' the learning in the moment" [15]. When this happens, staff responsibilities can be unclear or overlapping; teaching assistants can be called on to mediate the teacher's pedagogical approach.

Evidence has shown that the limited uptake of inclusive pedagogies result from a range of difficulties. This includes a lack of useful guidance underpinned by research that can be introduced to teachers during initial teacher education programmes and via in-service professional courses, to enable teachers to develop the skills and knowledge they need. Moreover, heavy teacher workloads and related time constraints limit both the opportunity for teachers to access this training or to incorporate inclusive pedagogies into their lessons even when they are able to see the potential for this approach.

3.3 Digital education

The introduction of digital technologies into schools has also been somewhat disappointing (up until the point of the pandemic where longer-term changes to digital use practices and implications are not yet knowable). There has been much promised about the potential of digital technologies to support disabled children, offering them incomparable opportunities to facilitate independent access to the curriculum and learn alongside their peers [16]. This is particularly evident when inclusive digital pedagogies are adopted that enable 'teaching and learning activities whereby class teachers have designed lessons for all children from the outset using digital technologies, thereby facilitating independent access to the curriculum for disabled children' [2, p.11]. Yet, successive studies have shown that digital practices in schools by children are often uncreative and dull. While some pockets of innovative and creative uses of technologies clearly exist, many reflect traditional teaching practices rather than enabling the development of more innovative digital pedagogies that could enhance and revive the curriculum. For example, limited digital practices such as Excel for tables and graphs, PowerPoint and word processors for writing have often been reported [17]. These typical 'office' uses are in contrast to the potentially more collaborative and student-centred learning approaches that digital technologies can afford. In the last decade, possible opportunities that are more exciting have arrived with the increased use of mobile devices in schools. These are potentially really useful for disabled children due to in-built accessibility functions. Researchers quickly observed that the use of well-chosen apps were received positively by young people [18]. Yet, since then mobile devices have been criticised and banned [19]. The continuation of mostly mundane digital use practices undermines the opportunities for disabled children to take part in expansive, engaging and innovative activities alongside their peers. Instead, mobile devices have been used mainly as assistive technologies by disabled children thereby potentially stigmatising them and highlighting individual differences between children [20].

3.4 Developing inclusive (digital) pedagogies

A key issue within debates in the past has been that teachers are rarely introduced to disability studies in education to support positive change [21]. Alongside this there has been an accompanying lack in guidance available to teachers about how to develop pedagogies that reflect the underlying beliefs, values and attitudes of inclusive education [22]. Important exceptions are, for example, the 'Index of Inclusion', a set of re-

sources for schools to develop inclusive practices by [23]. Florian and Spratt also developed a model for use in teacher education [22]. This was a holistic model built on themes of learning, social justice and every teachers' role as an 'active professional'. They argued the need for a set of underlying principles that enable teachers to develop the knowledge and skills they need to provide meaningful learning with the same opportunities available to all children.

In relation to the development of inclusive digital pedagogies, this area has been underdeveloped with little attention given to digital use practices in situ in the context of inclusive education policy. There have been studies and evaluations of particular software or hardware; or interventions aimed at improving specific learning outcomes such as learning and independence [24]; communication, organization and social skills [25]. Some providers and educators have also generated useful lists of accessible apps for disabled children to use. But in general, there has been very little research about how disabled children use technologies for learning in situ in ways that embed the underpinning beliefs and values of inclusive education with associated guidance for teachers about how to implement this.

4 Exploring the current context

We are now at a critical moment in time. To take stock of this key moment, a review is presented of the current state of play of each of the key categories of children's and human rights, inclusive education, digital education and stage of development of inclusive digital pedagogies. This will provide the foundations to make recommendations to build more innovative, effective and inclusive digital pedagogies for the future.

4.1 Children's and human rights legislation

The United Nations Convention on the Rights of the Child General Comment No. 25 [26] recommends four general principles. Firstly, children should not be discriminated against and should not be excluded digitally. Secondly, the best interests of the child should guide the development of any online provision. Thirdly, children should be protected from risks to their 'life, survival and development'. Finally, digital technologies should be harnessed so that children can express their opinions and give their views on matters that relate to them. The importance of digital technologies in supporting children's learning is highlighted including access to educational resources, teachers and peers, and opportunities to continue learning outside classrooms. The General Comment also notes that digital technologies can address barriers that disabled children face and that attention should be paid in schools to ensuring that new barriers are not introduced by offering them assistive technologies, multiple formats of digital resources and meeting the principles of universal design.

4.2 Inclusive education

Despite policies in all four UK nations that promote inclusive education, in reality progress has remained slow [27] as it has been internationally [28]. Since the introduction of the Children and Families Act in 2014 in the UK, disabled children can access support through an education, health and care (EHC) plan if they are assessed to need more 'special educational needs' support than can be routinely provided by the school. However, despite this provision, a House of Commons government Education Committee report in 2019 stated that current policy, the Children and Families Bill (2014), had 'let down' a generation of children and young people [29]. Implementation had resulted in buck-passing, lack of general accountability, shortage of the resources available and a bureaucratic nightmare. More recently, a parliamentary report [30] concluded that 'Mainstream schools have little financial incentive to be inclusive of pupils with SEND [Children with special educational needs and disabilities] (p.6). This suggests that inclusion in the UK at least currently remains problematic.

4.3 Digital education

Many schools across the globe were generally unprepared to meet the challenges posed by the pandemic and in particular the necessity to support their students' remote learning. Teachers, both experienced and inexperienced with digital pedagogies, were forced to move teaching online with little time for planning and developing best practice [31]. Initially, there was little synchronous interaction (e.g. 'live' lessons) as schools investigated safeguarding issues and were cautious not to exclude students due to lack of technology access [31]. The pandemic compelled parents and carers to become more involved in supporting their children's learning. This obligation came with great upheaval and anxiety for all citizens with the societal move to a lockdown situation, with parents and carers facing competing demands on their time and feeling that they lacked the knowledge to undertake this new role [31].

The shift to emergency remote online learning has provided unique opportunities for effective, innovative solutions to be identified, created and scaled, albeit over a period of many months as schools rushed to develop remote learning strategies, invest in new technologies and provide professional development for their staff. As noted earlier, research carried out pre-pandemic has shown how digital practices outside of school settings are often more expansive and engaging than the typical, passive uses of technology in schools [32]. Yet in school, mobiles devices, for example, have often been criticized and banned [19]. Therefore, it is essential that we know how emerging effective remote learning strategies can be sustained and scaled to mitigate educational disadvantage both as pupils go back into school and during further disruption caused by future lockdowns. Not only is this a necessity but teachers and parents are desperate for evidence-based guidelines and strategies to support effective practices in the current crisis and for post-pandemic schooling.

The rapid pivot to remote learning in March 2020 created particular problems for teachers trying to support SEND students in mainstream schools. 73% of SENDCos

reported that they experienced challenges including supporting SEND students remotely and supporting teachers to provide differentiated learning [33]. However, there is some evidence that SEND students found remote learning to be beneficial. For example, school leaders reported that students with autism and hearing impairments found it easier to study at home without so many distractions [34]. Furthermore, SEND students benefited from working at their own pace and being able to revisit and review learning activities [35].

4.4 Developing inclusive (digital) pedagogies and future directions

Recent searches of the literature suggest an emerging trend towards encouraging and supporting teachers to develop inclusive pedagogies. These include examples by Moriña [36] who carried out a systematic review of approaches to inclusive pedagogies; Pozo-Armentia et al. [37] who explored pedagogical limitations to inclusive education and books aimed at teachers such as the recent edition, 'Inclusive Teaching in a Nutshell. A visual guide for busy teachers' [38].

In addition, a growing number of resources are available, such as the principles of Universal Design for Learning (UDL) (http://www.cast.org/our-work/about-udl.html#.XIZNwqbnW6k); Universal Instructional Design (UID); and resources provided by organisations such as CALL Scotland to enable disabled children to be supported by inclusive digital pedagogies (https://www.callscotland.org.uk/home/).

Universal Design for Learning is a design framework that is intended to ensure that teaching and learning is flexible and accommodates the needs of a diverse range of learners [39]. It does this through guiding teachers to develop inclusive pedagogy that represents knowledge in multiple ways, enables learners to express what they know in multiple ways, and maximises student engagement (eg through offering choice) [39]. Very little high quality empirical research has been conducted to date but there is a growing body of work that highlights its promise for making teaching and learning more inclusive and accessible [40,41,42]. The framework has not always been studied holistically with more studies focused on multiple representation of knowledge than multiple ways of students evidencing their learning [40]. Technology is often used to support a UDL approach as it lends itself to multimodal presentation, flexibility and adaptability [42,43]. Evidence of the impact on attainment to date is mixed but some suggest that UDL can have a positive impact [41] whilst others claim there is, as yet, insufficient evidence [44]. Irrespective of this, of course teachers require professional development and time to develop new skills [40,41,42,43], whilst collaborative approaches to developing UDL resources and approaches can be beneficial [41].

In terms of inclusive education policy, enactment has been impeded in the past due to the inability to incorporate inclusion in competing political agendas [45]. Thus, more joining up is required to ensure that inclusive education is addressed consistently across all relevant policies. Future policies for inclusive education need to focus on funding, teacher education, establishing a repository of supporting information for practitioners and unlocking the potential of UDL-informed digital pedagogy to support inclusive education [28, 30]. This includes future policies that should pay attention to technology-

enabled assessment which currently is often not informed by UDL principles and requires more research to ensure that access is equitable [30,46]. To summarize, research and development in the coming years needs to enable disabled children to realise digital practices in inclusive ways within every aspect of learning and assessment within and outside of schools. In addition, on the ground, research is urgently needed to understand, capitalise on and maintain pandemic related benefits for teachers and for all children including disabled children in terms of knowledge and skills that have developed via the shift to emergency online learning.

5 Developing fully inclusive digital pedagogies

With this in mind, we report here on early findings from a participatory pilot project carried out in the North West of England, designed to engage class teachers and other key personnel who support disabled children in mainstream education to identify, assess and develop inclusive digital pedagogies. The project aims to identify the key factors at different levels that support class teachers to develop inclusive digital pedagogies; collect exemplars of good practice (4-5); and understand the current success factors and challenges faced by classroom teachers in developing inclusive digital pedagogies. Participants will identify exemplary inclusive digital use practices alongside those that require further development. Stages planned are: a summary review of previous studies drafted in relation to the principles of Universal Design for Learning; a workshop held in each school to co-construct a framework for shaping understanding of how inclusive digital pedagogies can be recognized with practitioners; a two-day visit to each school to identify and document practices at different levels of maturity in the use of inclusive digital pedagogies; thematical analysis [47] drawing on the framework developed in stage 2; a final workshop at each school to review the analysed data with experienced practitioners to ensure the participatory approach is integrated throughout the project. Draft reports will also be shared with the schools and final feedback from participants in the project incorporated before finalizing. Ethical approval will be obtained through Lancaster University's rigorous and mandatory ethical approval process.

The project was originally planned for 2020, delayed until Summer term 2021, because of COVID-19. This meant that results; and the guidance the project will provide will take account of the re-entry point of teachers and children in England into schools. Two schools were recruited on the basis of externally recognised reputations for supporting disabled children. However, the ongoing impact of the pandemic on schools during Summer term 2021, including further lockdowns, resulted in data collection in one school only. Two group interviews were carried out using MS Teams with 2 teachers (a Mathematics teacher, also a digital learning leader; and a Science Teacher) and 2 support personnel for disabled children who work in the same school and described themselves as the 'Physical and sensory lead for children'; and a 'teacher of deaf children'). Questions focused on support for disabled children provided by the school pre-pandemic, during the lockdowns, with re-entry into schools, both generally and using digital technologies. Interviews lasted one hour. We have drawn on the data to provide

examples of key challenges faced by teachers and support personnel during the pandemic and what this highlights in relation to inclusive digital pedagogies.

Providing student access to appropriate technology was a major challenge in this school. It took some time (beyond the first lockdown period) to provide laptops or iPads to SEND students. The school initially gave some students old laptops from in-house stock but they had a number of technical issues that needed to be resolved and the IT support staff were unable to respond quickly due to increased workload. In addition, not all students could access the live lessons. One of the main challenges that teachers reported were the difficulties of working with accessibility features in the standard software (eg. Microsoft Teams, Powerpoint) adopted for remote teaching. Using live captions in Microsoft Teams to support hearing impaired students meant that teachers had to talk more slowly and annunciate carefully. Even then 100% accuracy was not achieved. Teachers partially addressed this by typing in further instructions through the chat facility, adding to their workload. Accuracy issues were also noted with the use of captions when pre-recording powerpoint presentations. Standard software used to present curriculum content was also noted to be challenging to access for some students due to the lack of contrast and the colours used. The teachers also noted that it was difficult for them to adapt their teaching resources due to the need to have a greater level of technical skill and confidence in using educational technology. Teaching assistants would have liked to provide simultaneous interpreting in Microsoft Teams for hearing impaired students but were unable to set this up, for example, as laptop cameras had been turned off. The teaching assistants also noted that some staff lacked understanding about some of their students' needs and were therefore unaware of pedagogic changes that could improve accessibility for some of these students. They also commented that sometimes teachers presented too much information simultaneously.

These early findings suggest the lack of readiness of teachers and schools to support disabled young people in the shift to remote learning in relation to students' access to laptops and tablet computers. This was amplified by time constraints for teachers combined with challenges to their pre-existing technical and accessibility skills. Moreover, teachers lacked the pedagogical knowledge needed to support these students' learning once teaching assistants were unable to provide their usual backup.

6 Conclusions

This chapter has considered the different policies and perspectives that aim to ensure that disabled children's right to inclusive learning with digital technologies becomes a certainty. As noted earlier, we are at a fulcrum where teachers' and children's digital knowledge and skills have developed during the pandemic. We need to ensure that these shifts are maintained in order that the opportunities that they can provide are realised. On the other hand, historically, and as our early project findings show, the situation for disabled children's digital learning is not secure. Our project will continue working with teachers to identify, assess and develop inclusive digital pedagogies. However, we conclude by emphasising the urgent need for further research in this field to ensure that

disabled children's rights to use digital technologies to support their learning in inclusive ways is recognized and supported.

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