Inclusive Education and Assistive Technology: A Global Perspective

A Review of the Literature

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Abstract

With an estimated one billion people around the world being disabled and an international push for inclusive education, many countries have imposed legislation to include children with disabilities in general education settings, however developing countries still face many obstacles. This literature review gives a global perspective on inclusive education and assistive technology in the United States, Asia, Africa and Europe. The definitions, interpretations and barriers that many countries face in the implementation of assistive technology and inclusive education are innumerable. They encompass a multitude of differing philosophies and practices. This review of the relevant literature will attempt to outline these challenges.

Keywords: global, special education, assistive technology, inclusive education, technology, Asia, United States, Europe, Africa

Introduction

The use of assistive technology (AT) has been in existence for thousands of years. In developed countries such as North America and Western Europe, assistive technology and inclusive education have been effective and successful while the developing countries of Africa, Asia, and Eastern Europe have met numerous challenges (Grönlund, Lim, & Larsson, 2010). "In these developing countries, disability is often associated with poverty caused by reduced participation in education, work, and community life" (Borg, Lindström, & Larsson, 2009, p. 1863).

With an estimated one billion people around the world disabled, 80% being from low and middle-income countries, disability is one of the major issues facing global health policy today (Skempes & Bickenbach, 2015). Access to assistive technology is limited in many

countries. The World Health Organization (WHO) estimates that "in low and middle-income countries only 5-15% of people requiring assistive technology have access to it" (2010). Similarly, countries with strong national education systems and economies successfully implement effective policies for students with disabilities (Alur & Timmons, 2009; Anastasiou & Keller, 2014). In reality, the use of technology will level the playing field and allow students with disabilities to achieve at the same level as their non-disabled peers.

"In the last two decades, the international community witnessed the release of several key guiding policies related to Inclusive Education, including the Convention on the Rights of the Child, the World Declaration on Education for All, the Salamanca Statement and Framework of Action, the Dakar Framework for Action, and the UN Convention on the Rights of Persons with Disabilities" (Ahsan & Mullick, 2013, p. 151-52). However, the physical (obstacles imposed by the environment) and social (attitudes towards people with disabilities) barriers to inclusive technology pose innumerable challenges for many countries (Tan & Ang, 2008). This review of the relevant literature will attempt to outline these challenges.

Definition and History of Inclusive Education and Assistive Technology

Assistive technology is defined by the US 'Technology-related assistance of individuals with disabilities act of 1988' (PL 100-407) as 'any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities'. Internationally, this definition is generally accepted (Scherer, 2002). Additionally, the United Nations defines assistive technology as 'technology specially designed to improve the functioning of people with disabilities' (World Health Organization, 2002). These technological

advances in aids to communication, mobility, computer access and prosthetics often alleviate many of the problems faced by the disabled population today. In the United States, most assistive technology leaders start with a focus on students with complex, low incidence physical, sensory or cognitive disabilities who can benefit from technology to speak and participate academically. Over time, new software tools were designed to address the reading, writing, and organizational needs of students with learning disabilities, language disorders, high-functioning autism and attention deficit disorders (DeCoste, 2013).

In recent years, individuals with disabilities have seen technology improve their lives many ways, but some of the assistive technologies we have today were developed on the foundations of ancient society. From "The Cairo Toe," the first recorded piece of assistive technology which dates back to a 950 B.C. Egyptian tomb, to the first pair of bifocals invented by Benjamin Franklin to the iPad of today, assistive technology has come a long way in assisting disabled men and women lead more productive lives (Assistive technology from ancient to modern times).

The term 'inclusion' has different meanings when applied to different settings. In the Western, Northern and more developed countries, inclusion practices mainly focus on the elimination of segregated services for disabled children with efforts to make them part of the general education classroom. However, in Southern, developing and Third World countries, where children struggle for their next meal, inclusive education efforts focus on getting all children into an educational system irrelevant of any disabilities (Singh, 2009). "Inclusion is a multifaceted endeavor that requires collaboration among a variety of stakeholders, grounded in a holistic approach, backed up by a robust policy and systems architecture" (Crawford, 2009, p. 50).

Inclusive Education and Assistive Technology in the United States

In 1975, the United States enacted the Education for All Handicapped Children Act (PL 94-142) which guaranteed a "free and appropriate" education in the "least restrictive environment" for all students with disabilities. In addition, schools are now held accountable for making sure that students with disabilities not only participate fully in their education program but make adequate yearly progress in the general education curriculum (No Child Left Behind, 2001).

Many school districts have conflicting definitions of inclusive education. While students with high-incidence disabilities are accepted in their neighborhood schools, students with severe or low-incidence disabilities have difficulty finding appropriate programs, and consequently, those students might be enrolled in an appropriate program in a neighboring district (Yssel, Engelbrecht, Oswald, Eloff, & Swart, 2007). Additionally, students with mild cognitive disabilities are often placed in self-contained classrooms for a large portion of the school day in their area school but may be "pulled out" for additional help in the areas of mathematics, reading and writing (Yssel, Engelbrecht, Oswald, Eloff, & Swart, 2007). "Services are quite similar no matter where one attends school, whether that school be urban or rural, largely middle class or largely poor" (Kritzer, 2014, p. 3372).

In 1997 the Individuals with Disabilities Education Act (IDEA, 1997) was reauthorized, and mandates were set in place so that assistive technology would be considered when planning the Individualized Education Program (IEP) of each disabled student. "This landmark policy sought to ensure that all students who could benefit would have access to assistive technology devices and services to maximize the benefit they receive from their educational programs" (Edyburn, 2003, p. 130). In order for these mandates to be effective, however, teachers need to

receive the proper training on how to make appropriate AT choices for their students. Support of the administration and community, access to the appropriate equipment and technology supports and time for collaboration and professional development are essential for successful implementation (Messinger-Willman & Marino, 2010).

Parent involvement in the decision-making process, acquisition, and implementation of assistive technology is crucial. "The United States has had a long and rich history of parent advocacy, resulting in groundbreaking changes in the education of students with disabilities and acting as the driving force in the move toward including students with disabilities in general education throughout the country" (Yssel et al., 2007, p. 356). According to the mandates by the Individuals with Disabilities Education Improvement Act (IDEIA) of 2004, a parent's right to due process and their involvement in the planning, evaluation and decision making in their child's education is one for the foundations of the education system in the United States.

Inclusive Education and Assistive Technology in Asia

There are many factors which limit access to education for children with disabilities, including not only physical barriers but negative attitudes by society. The ideal model of an inclusive society in Asia is plagued with diverse cultures, languages, and political systems as well as "disparities in the state of economy, educational level, and urbanization across the continent" (Tan & Ang, 2008).

Special education in China lacks the consistency that is shown by schools in the United States. Every school, city, and province have their own educational systems in place with regards to students with disabilities (Kritzer, 2014). Children with physical disabilities and mental retardation are often excluded from school due to lack of resources and personnel while

children with high-incidence disabilities, such as autism or learning difficulties, are not recognized as having a disability at all (Deng & Harris, 2008). Disabled students in China also face large class sizes where they are often ignored as well as teachers who have not had training in special education (Ellsworth & Zhang, 2007). "In 1991, it was estimated that it would take more than 1,000 years to educate enough teachers to meet the needs of just the students with mental retardation" (Kritzer, 2014, p. 3375).

In India, the implementation of education laws is not consistent among different states because the individual State Governments interpret these laws differently and implement them differently. In Kerala, children consistently complete their elementary education and transition to secondary education but in the state of Bihar, only 50% of children go to school, and the majority of those children fail to complete their elementary cycle. Most schools in Bihar are understaffed with undertrained teachers who receive little academic support (Das, 2011).

In 2001, the Bangladeshi government enacted the Disability Welfare Act, which not only defined disabilities but indicated that children with disabilities should be educated in an accessible environment by properly trained teachers in inclusive settings (Grönlund et al., 2010). However, children with hearing impairments are not exposed to Bangla sign language nor do they consider alternative communication methods for children with autism and those who are intellectually challenged (Ahsan & Mullick, 2013), additionally, it is estimated that over two million people in Bangladesh would benefit from wheelchairs, orthotic devices and hearing aids (Borg et al., 2012).

The use of assistive technology in Asia has also been impeded by several economic factors. Because many of these products are imported from developed countries such as the United States, Europe, and Japan, the high cost of these assistive technologies prohibits their

purchase in Asia. Additionally, technologies developed for western populations rarely take into consideration the local environment, language or petite physique of the Asian culture (Tan & Ang, 2008).

Inclusive Education and Assistive Technology in Europe

In a 1994 meeting in Salamanca, Spain, "representatives of 92 governments and 25 international organizations met in to encourage a human rights-based approach to education determining that countries should concentrate their efforts on the development of inclusive schools" (UNESCO, 1994, p. 13). The aftermath of this meeting elevated the urgency of inclusion and inclusive education by many government officials and media outlets (Hodkinson, 2013).

In the United Kingdom, the study of disability is a respected area of research and teaching in British colleges with researchers coming from the fields of health sciences and social sciences (Bampi, Luciana Neves da Silva, Guilhem, & Alves, 2010). However, England has been plagued with controversy on the education of students with disabilities. There have been substantial concerns about the education of special needs students which have been underlined in a "consultation document", known as the Green Paper (DfEE, 1997). "The Green Paper encourages schools and local authorities to develop more inclusive policies and practices for all pupils, including those with special needs" (Farrell & Tsakalidou, 1999, p. 324). As a result, mainstream, general education schools are being pressed to include students with disabilities, causing an increasing number of special schools to close (Hodkinson, 2013). However, "government legislation in the UK, which has introduced a 'market led' philosophy in which mainstream schools compete with each other for children and where 'excellence' in education

tends to be measured solely on academic criteria, has led to students labeled with behavioral disorders being shunned from general education schools" (Farrell & Tsakalidou, 1999, p. 65).

With the passage of Italy's Law 517 in 1977, Italy has been touted as a country that has been highly inclusive in its educational programming, eliminating special schools and classes and placing students with disabilities in general education classrooms. Although several amendments have been made to Law 517over the years, inclusive education has been either maintained or strengthened with provisions for personnel supports to help inclusive classrooms succeed (Palladino, Cornoldi, Vianello, & Scruggs, 1999). The culture of Italy suggests the widespread acceptance of students with special needs, including those with severe disabilities, into all classroom settings placing their value as students and access to education equally to their non-disabled peers. "For the most part, including students with disabilities in Italy is not controversial, an experiment, a passing fad, or a right that needs to be earned by meeting certain criteria or functioning at a particular level. Students with disabilities are welcomed simply because they are human" (Giangreco & Doyle, 2015, p. 24).

In Germany a significant percentage (sometimes exceeding 90% in some German states) of students with Attention Deficit Hyperactivity Disorder and Learning Disabilities attend schools specifically designed for students with cognitive and emotional disorders. The acceptance of these special learning environments frequently impedes the process of inclusion in Germany. And although some children are offered modifications and additional supports in "regular" classrooms, on most occasions, students with behavioral disorders or cognitive impairments are referred to these special schools (Al-Yagon et al., 2013). When you look at Germany as a whole, "one can see a difference between those federal states whose governments are led by Social Democrats and those led by Christian Democrats. Although neither are actively

promoting inclusive education, Social Democrats are much more open-minded towards new educational and social policies than Christian Democrats, who argue for the continuity of the old-fashioned German school system and its segregated and social selecting structures" (Hinz, 2009, p. 300).

Inclusive Education and Assistive Technology in Africa

Children with disabilities face barriers to education for a multitude of reasons in Africa. It is believed by a number of African societies that witchcraft is strongly linked to the ill health and disability of a family member (Groce & Zola, 1993). Still others believe that if a pregnant woman looked at a person with a disability, she was likely to bear a child with a disability (Mtetwa & Nyikahadzoi, 2013).

"In Nigeria and other sub-Saharan countries, fiscal constraints have affected the inclusion of children with disabilities from any form of education, special or not" (Anastasiou & Keller, 2014). Elementary schools in these African countries continue to charge fees despite the legal guarantee of free education, adversely affecting the education of children with disabilities (Anastasiou & Keller, 2014).

In South Africa, where educational policy dating back to 1996 guarantees the rights of children with disabilities to a basic education, this effort has been hindered by a lack of teachers who have the knowledge and skills to differentiate instruction to address the unique needs of these students (Dalton, Mckenzie, & Kahonde, 2012).

In 2001, South Africa introduced Education White Paper 6 which called for an undivided system of education, including students with disabilities. The institution of this integrated system promised a flexible curriculum, district-based support teams, and professional development to

provide teachers with the skills to educate the diverse learner, and was intended to transform the South African educational system. Unfortunately, even after the introduction of Education White Paper 6, most learners with disabilities are still in separate, "special" schools and not included in general education settings due to the apparent lack of clarity and poor implementation of this policy (Donohue & Bornman, 2014; Murungi, 2015).

"The many different ethnic and language groups in South Africa, along with the country's apartheid history and rampant poverty, contribute to a society that has many different ideas not only about the needs of children with disabilities, but also about best practices and beliefs regarding how they should be educated" (Donohue & Bornman, 2014, p. 3). "Whilst the concept of inclusion had been used in the context of special education for disabled children under apartheid, the general usage of inclusion in the South African educational context post-democracy has been to argue for the inclusion of the majority of black South Africans, including disabled persons, in equitable provisions within a non-racial and democratic educational system. Opposition to apartheid education thus went beyond 'special needs' in education and called for a transformation of society" (Naylor, 2009, p. 321).

Conclusions

Through the research, it is evident that inclusive education and assistive technologies are more highly developed in the United States than in any of the aforementioned countries. Even for countries with stable economies, "special education typically commands substantial budgets and is supported by large numbers of trained staff, effective legislation and specific curriculum development" (Alur & Timmons, 2009, p. xi).

Even though a concerted effort towards integration and inclusion can be observed internationally (Schwab & Hessels, 2015), inclusive education in most countries needs a few more years to be refined and developed (European Agency for Development in Special Needs Education, 2010).

According to a report by the World Health Organization, many children with disabilities and their families have limited awareness of assistive products and services making it difficult for them to know what assistive technologies are available and how they can benefit the everyday lives of their child. In many countries, there is little or no production of assistive technology products due to lack of awareness, limited access to materials, low demand and "import taxes associated with assistive technology can discourage local businesses to import materials, equipment or assistive products" (WHO, 2015, p. 19-20).

Even though assistive technologies have proven to have a positive impact, prior research on the use of assistive technology in inclusive education in developing countries is limited (Grönlund et al., 2010). Further studies into the acquisition and use of assistive technology in under developed countries need to be performed. "The scientific community needs to provide evidence to help national and international governments and organisations to develop methods to supply assistive technology to all individuals who could benefit" (Borg et al., 2009, p. 1864). Many of these countries have a shortage of teachers trained to educate students with special needs especially students with severe disabilities who can benefit from the accommodations and modifications afforded to them by the use of assistive technology.

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