

ASSISTIVE TECHNOLOGY AND INCLUSIVE EDUCATION

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Abstract

Inclusive education is a process that is taking place all over the world. There are difficulties on implementing it. The use of assistive technology has great impact on facilitating the education process not only for the students with special needs, but, also, for teachers and for all the students. The paper is based on the use of literature in Albanian and foreign languages. The purpose of the paper is to treat theoretically the impact of assistive technology on inclusive education. The main objectives of the paper are: a)giving the concept of the inclusive education, b)giving the concept of assistive technology, c)giving the benefits of assistive technology use on education of children with special needs. The research question is: What is the impact of assistive technology use on education of children with special needs? There are given the appropriate conclusions. It is concluded that students benefit from the use of assistive technology in education process, but, the teachers, also, benefit in the teaching process. It is highlighted the fact that the teachers must be careful in the use of assistive technology. They must adopt the use of assistive technology taking in consideration the needs of children.

Keywords: *inclusive education, assistive technology, students with special needs.*

Introduction

Inclusive education is an important topic today in the world. Everyone has the right to education, despite various differences. This fact is documented at The Universal Declaration of Human Rights (Article 26, December 1948) that claimed: “Educating shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace.”

The usage of technology on the education process is very important. It influences the quality of teaching. The usage of assistive technology is, also, very important and has positive impact on teaching children with disabilities.

There are a lot of authors that pointed out the essential role of technology on the education, in general, and the importance of assistive technology, as: Alpher & Raharinirina, 2006; Marino, 2009; Traynor, 2003; Van Daal & Reitsma, 2000. Other authors, as Beck, 2002;

Edyburn, 2000, 2002, 2003a have stressed the advantages of assistive technology, making clear the fact that it facilitates the work of teachers, but, also, it facilitates the learning of disabled children.

Alper & Raharinirina, 2006; Michaels, Prezant, Morabito, & Jackson, 2002; Rose, Meyer, & Hitchcock, 2005 pointed out the role of assistive technology. According to them, "Assistive technology holds the potential to maximize educational opportunities for individuals with disabilities in inclusive classrooms by promoting access, participation, and learning outcomes" (Cited by Marino M.T., Sameshima P., Beecher C.C. 2009).

The paper treats theoretically the concepts of "inclusive education", "assistive technology". The paper aims, also, to clarify the impact of assistive technology on inclusive education. The paper is available for the target-group of teachers and educators, for the target-group of parents, for the target-group of school psychologists, for the target-group of school social workers, etc.

It is very important to be known the advantages of using assistive technology on the education process. For this, all the people that work with children should know the term of inclusive education and the term of assistive technology and its types. So, they will have more positive attitude toward assistive technology implementation and they will better use the assistive technology in order to improve the quality of teaching for all the learners in the classroom.

Methodology

The paper is a qualitative research and it is based on the literature review in Albanian and foreign languages. The purpose of the paper is to treat theoretically the impact of assistive technology on inclusive education. The paper is intended to achieve the following objectives:

- a) giving the concept of the inclusive education,
- b) giving the concept of assistive technology,
- c) giving the benefits of assistive technology use on education of children with special needs.

The research question is: What is the impact of assistive technology use on education of children with special needs?

The paper will try to present the impact of assistive technology use on education of children with special needs.

Theoretical treatment

In recent years, the concept of inclusive education has been broadened to encompass not only students with disabilities, but also all students who may be disadvantaged. Earlier, Skrtic et al. (1996) had argued that inclusive education goes far beyond physical placement of students with disabilities in general classrooms, but should involve schools meeting the needs of all their students within common, but fluid, environments and activities. This broadened conceptualization of inclusive education was recently articulated in the meeting at the forty-eighth session of the UNESCO International Conference on Education, held in Geneva in November 2008, where it was acknowledged that 'inclusive education is an ongoing process aimed at offering quality education for all while respecting diversity and the different needs and abilities, characteristics and learning expectations of the students and communities, eliminating all forms of discrimination' (UNESCO, 2009, p.126) (Cited by David Mitchell PhD, 2010).

The European Agency for Development in Special Needs Education considered the inclusive education as a developing process and stressed the fact that it has been developing in different ways in different countries, depending on the specific condition. According to the European Agency for Development in Special Needs Education “Inclusive education is not a static phenomenon. It has been developing in different ways and it continues to develop” (European Agency for Development in Special Needs Education, 2009).

The implementation of inclusive education is not easy. There are some barriers and challenges, including the barriers that are related to the attitudes toward marginalized children, barriers that are related to the infrastructure of schools, etc. One of the challenges is related to the usage of assistive technology and to the training of the staff. This fact has been highlighted by the United Nations Educational, Scientific and Cultural Organization in 2006 that cited that “Inclusive education presents an opportunity for students with special needs to attend mainstream classrooms with their age-group peers. To realize this we need to provide for the relevant conditions of overcoming the barriers to the learning process. Particularly speaking, these conditions are attained via the facilitation of ICT infrastructure for SNE, integration of ICTs into SNE curriculum and training of ICT specialists in SNE”.

Assistive technology is one of the most frequently utilized forms of technology for students with special needs. The purpose of assistive technology is to provide students with disabilities “access to the general education curriculum for academic, social, and extracurricular activities” (Dyal, Carpenter, & Wright, 2009, p. 557). (Cited by Laura Hembree Knighton, 2013).

IDEA (The Individuals with Disabilities Education Act) in 2004 gave this definition of Assistive technology device: “The term ‘assistive technology device’ means 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 a child with a disability. The term does not include a medical device that is surgically implanted, or the replacement of such device.”

IDEA in 2004 gave this definition of Assistive technology service: “The term ‘assistive technology service’ means any service that directly assists a child with a disability in the selection, acquisition, or use of an assistive technology device”.

There are various classifications of assistive technology.

Ganschow and colleagues grouped assistive technology devices into three categories: (a) low-tech, (b) mid-tech, and (c) high-tech (Ganschow, Philips, and Schneider, 2001). Low-tech devices are usually non-electronic and easy to use as involve little or no training. Low-tech devices are widely available with low cost and little if any maintenance (e.g., pencil grips, highlighter tape or pens, and adapted furniture). Mid-tech devices are easy to operate electronically with minimal training and require basic maintenance. Mid-tech devices are commercially available and generally moderately priced (e.g., adapted keyboards, electronic dictionaries, and tape or digital recorders). High-tech devices involve complex electronics and usually contain microcomputer components for storage and retrieval of information. High-tech devices are expensive and require ongoing maintenance and extensive training (e.g., word prediction software, talking calculators, and hearing aid and/or assistive listening device) (Cited by Keetam D. F. Alkahtani, 2013).

According to Parette & Wojcik (2004), “Assistive technology is generally divided into the following categories: communication, computer access, daily living, mobility, recreation, reading, writing/spelling, math, and memory/organization (Parette & Wojcik, 2004).

Communication-based assistive technology is intended to help the communication skills of those with speech problems, mental retardation, or writing difficulties (Parette & Wojcik, 2004). Assistive technology for computer access promotes interaction with computers, often through adaptive keyboards, touchscreens, and specialized software (Parette & Wojcik, 2004). Daily living assistive technology devices assist with activities such as dressing, hygiene, eating, etc. (Parette & Wojcik, 2004). Mobility devices include any products that help with movement and transportation (Parette & Wojcik, 2004). Assistive technology for recreational purposes aids in the participation of sports, social, and cultural events (Parette & Wojcik, 2004). Reading-centered assistive technology includes any device that helps with the access and understanding of printed materials (Parette & Wojcik, 2004). Assistive technology for writing and spelling helps students with special needs communicate through writing in ways that can be understood by others (Parette & Wojcik, 2004). Math-based assistive technology provides support for making mathematical computations, such as with a calculator or the use of manipulatives (Parette & Wojcik, 2004). Assistive technology for memory and organization is designed to assist students with special needs to organize materials, follow a sequence of steps, and utilize a schedule (Parette & Wojcik, 2004) (Cited by Laura Hembree Knighton, 2013).

Dianne J. Chambers made another classification, specifically: "AT can be described as low-tech or high-tech (and occasionally as mid-tech). Low-tech AT includes tools which are generally easily constructed or are of a low level of technological complexity. High-tech tools include sophisticated electronic devices and software. Examples of AT include pencil grips, modified eating utensils, voice output devices, adapted switch software and computer screen magnifiers" (Dianne J. Chambers, 2011).

According to Janet Hopkins, "Adding to the complexity of assistive technology service provision is the wide range of products available: a) Low tech: erasable pens; coloured coding systems and overlays; tactile and manipulative learning products; highlighter pens and tape, b)Mid tech: battery operated devices such as tape recorders, timers, lighted handheld magnifiers, books on tape, c)High tech: portable computerized devices; standard and specialized computer hardware and software" (Janet Hopkins, 2004).

There is a consensus among many authors that the use of assistive technology in the teaching process is very useful and presents some advantages and benefits.

The United Nations Educational, Scientific and Cultural Organization mentioned some of the general benefits of ICT use in education of people with special needs, for example: Enables greater learner autonomy; Unlocks hidden potential for those with communication difficulties; Enables students to demonstrate achievement in ways which might not be possible with traditional methods; Enables tasks to be tailored to suit individual skills and abilities (United Nations Educational, Scientific and Cultural Organization, 2006).

Donald Rice mentioned other benefits. According to him, Accessible ICTs hold the potential to enable persons with disabilities to receive an education and become productive members of the social and economic life of their communities. Applied to education systems, the effective and well planned use of ICTs by students with disabilities can provide equitable learning opportunities through enabling communication with teachers and fellow students, providing access to learning materials and by enabling course work, assignments and examinations to be completed. The wide variety of accessible ICTs currently available that can help overcome reduced functional capacity and enable communication, cognition and access to computers (Donald Rice, 2011).

According to Moore and Taylor, Waddell, “Computers can improve independent access for students to education” (Moore and Taylor, 2000; Waddell, 2000).

According to Waddell, “Visually impaired students using the internet can access information alongside their sighted peers” (Waddell, 2000).

According to Worth,: “Students using voice communication aids gain confidence and social credibility at school and in their communities” (Worth, 2001).

Other authors have mentioned the benefits for the teachers. Teachers benefit from effective use of assistive technology. Assistive technology can provide a teacher more options to use in addressing different learning styles for individual students using visual, auditory and tactile approaches. By making a student more independent, assistive technology allows teachers to spend more time on group activities and to give students more one-on-one attention. (South Carolina Assistive Technology Program, 2015).

Blackhurst (2005) suggests that assistive technology can be used to assist learning, to make learning environments more accessible, and to enhance independence amongst individuals with learning disabilities. Assistive technology can also help individuals to accomplish educational goals, and when used strategically, technology can help bypass conditions that once prevented students from obtaining higher levels of learning. The use of assistive technology may provide a compensatory alternative, and when embedded within quality writing instruction, improved achievement may ensue (MacArthur, 2009) (cited by Gabrielle Young, Assistant Professor, Memorial University of Newfoundland).

It is evident that the usage of assistive technology has benefits for the students and for the teachers, but, its implementation should be done in the proper way, otherwise, there will be new barriers in the process of teaching.

While AT can help overcome some of the functional barriers created by disability, it can also create new barriers if not matched carefully with individual needs. In an inclusive education context the effective integration of AT devices to enable learning would require an assessment process with two objectives: (1) to assess the needs of the learner and (2) to access resources in order to meet those needs (Winter, Fletcher-Cambell, Connolly and Lynch, 2006: quoted in NCSE, 2006) (Cited by Mary Hooker, 2007).

The knowledge of teachers regarding the implementation of assistive technology in the school have an important role, as cited by many authors.

All of today's educators must have adequate technology knowledge and skills to serve the increasing number of students with disabilities who participate in inclusive general education classrooms (Wagner, Newman, Cameto, & Levine, 2006) (Cited by Marino M.T., Sameshima P., Beecher C.C. 2009).

For education professionals to use AT effectively with young children with disabilities in classroom settings, those teachers must first (a) develop a basic *understanding* of technology and its potential contributions to education, (b) demonstrate some proficiency in *using* AT to create classroom instructional supports, and then (c) actually *create and implement* instructional activities and products using the technology. In doing this practitioners must acquire both *operational competence* (i.e., familiarity with the basic features of a particular technology) (Light, 1989), and *functional competence* (i.e., the ability to use the particular technology to create specific classroom products) (Parette & Stoner, 2008) (Cited by Howard

P. Parette, Craig Blum, Emily H. Watts, Julia B. Stoner, Brian W. Wojcik, Shannon B. Chrismore, Jack J. Hourcade, 2013).

Other authors highlighted the role of teachers' positive attitudes toward assistive technology. The teachers' positive attitudes toward assistive technology may help with students' frustration, motivation, peer acceptance, and productivity in the classroom (Quenneville, 2001). Bryant and Bryant (1998) made a call for teachers to use assistive technology to benefit students. Teachers' positive attitude toward the use of assistive technology is essential for its successful use in promoting student success (Cited by Kimberly D. Garcia and Randy L. Seevers Ph.D., 2005).

Discussion

In general, the paper achieved its objectives. There are explained the main concepts, as "inclusive education", "assistive technology". There are listed the benefits of assistive technology use on education of children with special needs. In this context, the paper tried to answer to its research question, presenting the impact of assistive technology use on education of children with special needs.

Conclusions

Inclusive education is part of education. It is a difficult process, because there are a lot of barriers for realizing it. This process can be facilitated by the usage of assistive technology.

There are many benefits of assistive technology use in education of people with special needs, but, there are, also, many benefits for the teachers.

It is very important that the implementation of assistive technology should be done in the proper way; otherwise, there will be new barriers in the process of teaching.

For the successful implementation of assistive technology the teachers should assess the needs of the learner, should access resources in order to meet those needs, should have adequate technology knowledge, and should have positive attitudes toward assistive technology usage in the classroom.

The paper tried to give a theoretical view of the implementation of assistive technology in the classroom. We hope that other similar papers will follow in the future; because there is evident the fact that in Albania, as in other countries of the world, the schools are becoming more inclusive and the implementation of assistive technology poses a great challenge for our teachers and for the Albanian education system.

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