Facilitating Inclusion with Assistive Technology

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Abstract
Technology is the driving force that will shape the future of our world, our nation, and our school systems, and the teaching/learning of all students. Assistive technology is meant to assist learning and to facilitate inclusion for all students. This paper examines the use of assistive technology in the classroom. It reviews different technology devices to assist students’ with their special needs.

Keywords
assistive technology, inclusion, educators

Introduction
Support is needed to make inclusion of students with disabilities and all students successful in the classroom. Legal mandates such as in IDEIA requires that students with disabilities have access to Assistive Technology (Yell, Shriner, & Katsiyannis, 2006). Traditional support models include co-teaching, or full time assistance from a paraprofessional (Walther, Thomas, & Bryant, 1996). However, the teacher remains the main component in successful inclusion. A study by Kern (2006) indicates that teachers’ attitudes toward inclusion varies. Lack of support, inadequate resources, heavy workload, and lack of training were the primary reasons for their negative attitudes.

Assistive Technology
Assistive Technology (AT) can relieve teachers’ workload when used with knowledge and familiarity. AT has been documented to be an aid in supporting special needs students’ educational and inclusion needs (Alkahtani, 2013) and has been demonstrated by a review of research based studies to result in academic improvement (Maor, Currie & Drewry, 2011). AT has always been used in the classroom (Carpenter, Johnson, & Beard, 2015). Chalkboards were the innovative technology in 1890 and the radio in 1920 was regarded as a new wave of learning (Purdue University 2017). Recent technological innovations are increasingly regarded as a major support factors. However, teachers need the training to be able to use AT. School districts, as well as universities, need to prioritize these factors when training teachers and prospective teachers. Researchers as well as practitioners in the Assistive Technology (AT) field have proposed including AT into teacher education (Van Laarhoven & Conderman, 2011). This proposal must be taken seriously not only for the sake of students with disabilities but for all students. Assistive technology is divided into high technology and low technology. It can be an electronic sophisticated device or a plain yellow marker to emphasize main ideas. It can be described as any tool or device that a student uses to do a task more easily, faster, or in a more efficient way. Low assistive devices can include calculators, FM listening systems, timers, audio players and other means that lead to learning. There are also more high sophisticated, expensive, devices such as text to speech: U-reader; Read & Write; the pocket Communicator, the reading Pen TS and the Kurzweil. In 1976, the Kurzweil was a cumbersome machine that translated written text to auditory cassettes. It was used mainly for individuals with visual impairments. Today Kurzweil 3000 is an integrated device that scan and read software programs that provide multisensory access to reading material with powerful tools for reading, writing, test-taking and learning (Kurzweil Education Systems, 2017). The Pocket Communicator offers unlimited pages of words and phrases, along with the ability to create new words and phrases. This is the most portable and powerful speech solution available today. It can be helpful to individuals with communication difficulties or for second language learners. The Reading Pen TS (Touch Screen) is a portable learning tool designed for students of a second-language as well as for children and adults with reading difficulties (such as dyslexia). An individual can easily scan text using the touch screen and virtual keyboard, hear it spoken aloud and obtain definition, spelling, syllabication and correct pronunciation within seconds.

In the last decade, numerous researchers and experts in the field of Assistive Technology (AT) have called for the need for effective education preparation of special education teachers and others service providers with specialized skills in AT (Bakken & Parette, 2012; Naraian & Surabian, 2014; and Simpson, McBride, Spenser, Lowdermilk, and Lynch, 2012)[VSG1]. Others have documented that teachers need more professional development opportunities in order to use AT more effectively and that teachers report they have inadequate knowledge or inadequate competencies to

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recommend and deliver AT in school settings (Burgos, 2015; Sindelar, McCray, Brownell and Lignugaris, 2014). Etscheidt (2016) found that AT supports are often not available to students with disabilities. Equality alarming is that many AT providers in the United States indicated no or limited knowledge of AT in skill areas and furthermore reported their education and training as inadequate to fulfill four of the seven primary roles of AT services (Arthanat, Elsaesser, & Bauer, 2017). One of their recommendations from the study was that it validated the need to strengthen education and training of AT by including AT in professional curriculum and incorporating more appropriate pre-service and in-service activities. Teachers need to be knowledgeable and skilled in the use of AT. They need to feel confident when teaching and encourage their students to use AT resources.

Jacksonville State University (JSU) was recently approved by the Alabama Commission on Higher Education to offer a Master of Science in Instructional Technology emphasizing AT. Previously it had integrated this teaching in an online undergraduate teacher education program (Jacksonville State University, 2016). Numerous other universities such as George Mason University, Texas State University, Rutgers University and California State University offer courses in AT (RESNA, 2017). In spite of the progress at universities, programs, seasoned teachers lack the knowledge and experience in AT (Van Laarhoven & Conderman, 2011). In such cases it is up to the school systems to provide the in-service training and support to properly implement AT in the schools. It must start with a positive attitude and a willingness at the top to use technology to support students. The Council for Exceptional Children (CEC), the largest professional organization in the United States of teachers, administrators, higher education faculty and others concerned with the education of exceptional children recently proposed recommendations for teaching and learning with technology including AT for all students. These recommendations are provided below and it would be vitally beneficial to all learners to have these fully implemented.

Teaching

Recommendation 1. Emphasize the critical role of technology in the preparation of future educators with a dual focus on utilizing technology as a teaching tool once in the classroom; and as an innovative tool to better prepare future educators for their time in the classroom.

Recommendation 2. Emphasize the importance of ongoing, high-quality, job embedded, professional development that focuses on the use of assistive technology to enhance teaching, learning, and assessing student progress.

Recommendation 3. Encourage greater availability of assistive technologies and support better pre-service and in-service professional development of general education and special education professionals in the utilization of assistive technologies.

Learning

Recommendation 1. All technology used in educational settings must be accessible to a broad range of learners.

Recommendation 2. Encourage the availability, utilization, and awareness of assistive technology devices and services. CEC also has for the technology specialist a set of seven standards and a list of knowledge and skills needed for each. The areas relate to (a) Assessment, (2) Curricular Content Knowledge, (3) Programs, Services, and Outcomes, (4) Research and Inquiry, (5) Leadership and Policy, (6) Professional and Ethical Practice, and (7) Collaboration. These can be found in the book entitled “What Every Special Educator Must Know: Professional Ethics and Standards” published by CEC in 2015. These should form the basis for any education or training program for AT Specialists.

For a more global perspective on AT and students with disabilities, the World Health Organization recently released a discussion paper entitled “Assistive Technology for Children with Disabilities: Creating Opportunities for Education, Inclusion and Participation (World Health Organization, 2015). As was correctly pointed out “AT has been a missing link in the chain of prequisites that enable children with disabilities to lead a life where they can enjoy and exercise their rights”. Barriers of course do exist for an equal education but AT can reduce or eliminate some barriers. Seven barriers were identified that make it difficult for all countries to have quality AT services for students with disabilities. They are: (1) Lack of awareness, (2) Lack of Governance including legislation, policies, and national programs, (3) Lack of services, (4) Lack of products, (5) Lack of human resources, (6) Lack of Inaccessible environments, and (7) Financial barriers.

With over half of the world’s countries having no programs for AT, clearly the goals of equality of services has significant challenges. But in order to be achieved identification of barriers is a beginning. The paper also suggest some recommendations on how to address each one of them. In a study with young children, Pasnik (2013) found that children learned math and teachers grew more confident teaching math, when classrooms were equipped with high-end technologies, such as interactive whiteboards and laptop computers, and when teachers were encouraged to use high-quality free content featuring popular characters like Curious George and Sid the Science Kid. Another significant and successful effort on the use of AT devices for students struggling with mathematics was done by the Georgia Project for Assistive Technology in the Georgia Department of Education (Georgia Department of Education, 2010). In their document they provide information on the range of AT supports that can be used by students who are struggling in Mathematics. Supports are available to aid in basic calculations through higher level math skills.

Summary

When used appropriately assistive technology (AT) and interactive media are effective tools to support learning. AT has never been more affordable, more accessible, and easier to use. However, the cost of equipping a classroom with AT devices may be too expensive for many schools. Teachers must be trained to use them within their lesson plans. They must learn to develop effective lesson plans which integrate the use of AT. They must follow, whenever possible, a technology lesson with a personal interaction session. They must encourage the students to exchange ideas and opinions following the use of technology. Technology is
the driving force that will shape the future of our world, our nation, and our school systems and the teaching/learning of all students. It must also be integrated and embedded in education. Assistive technology is meant to assist learning and to facilitate inclusion for all students but it should not replace the teachers.

[VSG1] Is this study 2009 or 2012?

References


(2016). Instructional technology online.


(2017b). No boundaries. no barriers.

Alkahtani, K. D. F. (2013). Teachers’ knowledge and use of assistive technology for students with special education needs, volume 3.


Bakken, J. P. and Parette, H. P. (2012). The role of higher education in the preparation of educational professionals to use assistive technology. assistive technology: Outcomes. and benefits, 8(1).


