

ISSUES AND CHALLENGES IN CURRICULUM AND INSTRUCTIONAL TECHNOLOGY FOR SPECIAL NEEDS

Cenysia Binti Joimur

University of Malaya
Malaysia

Studies on issues and challenges related to curriculum and instructional technology with a particular focus on learners with special needs are crucially needed in order to rectify any problem faced. The issues include several challenges that have been reported including professional development, resistance to change, delivering informal learning, failures of personalized learning and failure to use technology to deliver effective formative assessments. Based on the interrelated issues and challenges, several suggestions are offered for the curriculum with the aim of assisting learners with emerging issues pertaining to application of instructional technology among learners with special needs. The curriculum is expected to be useful as it is designed and applied with instructional technology specifically tailored to learners with special needs. More cooperative and dedicated teachers are needed to facilitate the learners in utilizing the available instructional technology so that the teacher and learners with special needs get the optimum benefits.

Keywords: Curriculum, instructional technology, special needs

INTRODUCTION

Instructional Technology deals with the application of information system as the medium of teaching and learning activities. The Instructional Technology also known as Assistive Technology (AT) refers to the devices and services used to increase, maintain, or improve the capabilities of a student with a disability (Dell, Newton, & Petroff, 2012). Various studies on learning with technology have focused on different types of software programs and learners. Based on the reports, the effects are generally positive but there are different effects for different types of programs and different groups of learners. In an extensive review, Lou et al. (2001) found that learner characteristics affect learning

with technology in terms of demographic profile, computer literacy and self-ability.

In comparison to other interventions, assistive technology may have a significant effect in helping students with disabilities progress toward the goals outlined in their Individual Education Plans (Watson, Ito, Smith, & Andersen, 2010). These effects may be influenced by computer background, gender, ability and age. Meanwhile teachers must profess expertise in the technical aspects of Information and Communications technology (ICT), be an expert in teaching and learning and, therefore, determine how technology can best be used to assist and teach pupils to learn and participate in classroom life especially for learners with special needs. However, previous studies show that many teachers expressed their feeling on their lack of knowledge and support given to integrate assistive technology fully into the curriculum (Okolo & Diedrich, 2014).

This paper provides an overview of some of the issues regarding teaching and learning by using technology for learners with special educational needs (SEN). Investment in ICT and the development of policy and practice in meeting learners with SEN have created unprecedented opportunity for inclusion of all learners in meaningful learning experiences wherever learning takes place, be it in the mainstream or special schools, higher institutions or industrial training. Financing is required for preparing instructors to be well-equipped and thus successfully encourage AT utilization (Burne, Knafelc, Melonis, & Heyn, 2011). Besides that, all teachers who bolster an individual learner ought to learn about that youngster's assistive innovation and have the capacity to implant the use of innovation with guidance (Nelson, 2006; Okolo & Diedrich, 2014).

Educational researchers are increasingly studying how children interact with technology in naturalistic settings and applying what they are learning to increase the power of technology as a pedagogical tool (National Research Council, 2000; Pearson, 2003). Meanwhile, it is important to consider what is meant by ICT. Loveless and Ellis (2001, p. 2) point out that the term ICT describes sets of technologies that vary widely beyond the subject areas. Notwithstanding, challenges are encountered everywhere even in many developing countries because of the lack of vital e-learning components such as computers, electricity and skills (Dhanarajan, 2001; Heeks, 2002; Rajesh, 2003); and the participation of active and passive students which is required for interactive learning is also very rare in countries where the tradition is to teach in a more didactic manner (Eastmond, 2000; Evans, 2005; Sehrt, 2003). Meanwhile, Yelland (2003) suggests that after-school environments may be more conducive for learning because children have access to more interesting software and enjoy to explore and collaborate with others in solving problems.

SPECIAL EDUCATIONAL NEEDS

The term ‘special educational needs’ comprises numerous types of difficulties in learning. Students with special educational needs face a variety of issues, from those identified with specific impedances to those identified with learning and conduct challenges. The areas of needs are: communication and interaction, cognition and learning, behavior, emotional and social development as well as sensory and/or physical (Department for Education and Skills, 2001, p. 85).

Despite increasingly widespread adoption of technologies in virtually every aspect of education including those with special needs, significant challenges are preventing widespread effective implementation. According to some studies, though some of those challenges are systemic and some related to the technologies themselves, teachers and education leaders share in the blame as well (David, 2013). On the other hand, drop-out rates from e-learning education in the developed world are still much higher than in traditional, classroom based teaching (Levy, 2007; O’Connor, Sceiford, Wang, Foucar-Szocki, & Griffin, 2003; Romiszowski, 2004) even though there are various examples of impressive improvements.

IMPACT OF DIGITAL LEARNING

Today’s learners’ tendency and attitude reflect that of digital natives—yet they come to school and power down their devices. Thus, educators need to embrace the power of technology to make learning relevant for all students and adults. Utilizing innovation successfully in ordinary learning can assist learners with strengthening their learning encounters and expand on their natural innovation aptitudes. Using technology thoughtfully for instructional purposes will allow educators to stretch learners’ thinking in ways that will lead to success in today’s increasingly global economy and rapidly evolving digital environment.

However, there is a need for identifying and categorizing e-learning challenges addressed by research in the entire field conceptually, and to pay special attention to the potential differences. As reported by Kristin and Marshall (2009), most of the challenges in implementing instructional technology that have been reported include professional development, resistance to change, delivering informal learning, failures of personalized learning and failure to use technology to deliver effective formative assessments.

TECHNOLOGY AND SPECIAL POPULATIONS

The Americans with Disabilities Act (ADA) is a ground-breaking legislation marking the beginning of a new age of accessibility. The available rule disallows oppression incapacity, giving people with all way of one of a kind inabilities

expanded access to a wide assortment of opportunities. Nowadays, the challenges and barriers to that access have evolved in the most phenomenal ways. Innovation has thumped down the physical dividers that were at one time an obstruction to numerous chances. Consequently, technology has had significant effects on the quality of life for people with disabilities and has dramatically altered the application of ADA legislation.

Technology advancements have changed the medium of education in public, yet special education classrooms have been focused on particularly. As such, it is crucially needed for continuous work to improve efficiency, implement evidence-based practices, and provide greater accountability on key performance indicators that support successful academic and post-school outcomes for students with disabilities. Here, there are four of edtech's most significant impacts in the world of special education.

EDTECH AND PERSONALIZED LEARNING

Technology makes it possible for classroom instruction to be enhanced with individual learning events, allowing instructors to provide greater flexibility and differentiation in instruction to learners. Teachers can use technology of a variety of learning opportunities and approaches that engage, instruct, and support special education students with a myriad of tactics designed to appeal to individual learners. This step hopefully could assist many students in a classroom to understand more, trying to learn at a pace they might keep up with or participate in. Personalized learning becomes the true value of technology for special education which allows for a unique learning path to be created for every child, based upon the child's unique situation and needs. Learners have the chance to approach an educational module through an assortment of learning modalities, while utilizing a gadget they are used to and energetic about.

Building Skills for Life Outside of the Classroom

Technology is not just producing changes in the classroom but critical for preparing students for the world outside of school. It has turned into the desire of learners to successfully graduate from the classroom with abilities for the innovative world. Technology-assisted instruction allows student to learn in an interactive, hands-on manner, while also provided with opportunities to build those necessary tech skills. Technology in special education settings has blossomed well beyond assistive applications into being an avenue to help students especially SEN students to build a foundation for success outside the classroom.

A New Hope and Pace for Autistic Students

Autistic students are one subgroup of the SEN learners who have, overall, especially embraced and benefited from technology introduction into the classroom. Learners with mental imbalance will in general battle with dialect and conversation. It is also to assist in overcoming the language barriers by allowing autistic students to simply select an icon on the screen and then letting the device speak for them. As more and more autistic individuals use technology to improve the way they communicate, they are leading the charge in a growing call for a shift in the common thinking about autism.

Changing Landscapes for Students and Instructors

Similarly as understudies encounter the numerous progressions that innovation is realizing in the classroom, specialized learning educators will likewise need the aptitudes to stay aware of these advances for amazing proficient improvement previously, amid, and after the presentation of new advancements and assets to guarantee that instructors are appropriately prepared. Technology in the classroom is understood as being just as necessary as a chair or a desk, but its appropriate use is less clearly understood, and that is the critical piece. It is insufficient to just have the furniture in the classroom; it must be preferred, attentively masterminded, and very much utilized. Thus, professional development on HOW to use digital resources, tools, and content is what is making the difference in technology effectiveness (Winnie, 2015).

Meanwhile, Assistive technology (AT) is available to help individuals with many types of disabilities; from cognitive problems to physical impairment or learning disabilities (LD). In fact, technology use to enhance learning is an effective approach for many children (Kristin & Marshall, 2009). Additionally, students with SEN often experience greater success when they are allowed to use their abilities (strengths) to work around their disabilities (challenges).

Assistive technology for SEN

AT for children with SEN is defined as any device, piece of equipment or system that helps bypass, work around or compensate for an individual with specific learning deficits. Over the past decade, a number of studies have demonstrated the efficacy of AT for individuals with SEN (Collin et al., 1990). Even AT does not cure or eliminate learning difficulties, but it can help learners to reach their potential because it allows them to capitalize on their strengths and bypass areas of difficulty. A learner could utilize remedy in reading programming and in addition tune in to listen with the aid of audio books. In fact, research has shown that AT can improve certain skill deficits (e.g., reading and spelling) (Higgins & Raskind, 2000; Raskind & Higgins, 1999).

Types of learning problems addressed by Assistive Technology (AT)

AT can address many types of learning difficulties. A student who has difficulty in writing can compose a school report by dictating it and having it converted to text by special software. Young learners especially children who have difficulty with math can utilize a hand-held adding machine to keep track of who is winning while at the same time playing a game with a companion. Furthermore, a youngster with dyslexia may profit by AT that will peruse so anyone might hear his or her employer's web-based instructional pamphlet. There are AT instruments to help learners who battle with:

Listening

A particular type of Assistive Technology (AT) instrument can help individuals who experience issues preparing and recalling spoken language. Such gadgets can be utilized in different settings (e.g., a class session, or a gathering with many speakers).

Math

Assistive Technology (AT) devices for math are intended to assist individuals who battle with registering, sorting out, adjusting, and replicating math issues down on paper. With the assistance of visual or potentially sound help, clients would more likely set up and figure fundamental math issues.

Organization and memory

Assistive technology (AT) tools can help to enable individual to design, categorize, and monitor the schedule and calendar. Other than that, AT can help with planning, doing assignment list, contact data, and another important notes. These devices enable students to oversee, keep, and recover such data with the assistance of special web programming or software and hand-held gadgets.

Reading

An extensive variety of assistive technology (AT) tools can help a person plan, organize AT devices accessible to help people who battle with reading. Meanwhile, each kind of device is functioning much better or distinguished from previous devices; these instruments help by displaying content as discourse. These devices help encourage translating, improve reading and understanding for a much better comprehension level.

Writing

An extensive variety of assistive technology (AT) tools can help a person plan, organize AT devices accessible to help understudies who battle with writing. A portion of these instruments enable understudies to bypass the genuine physical

errand of writing, while others encourage appropriate spelling, accentuation, syntax, word utilization, and organization.

In spite of the excitement that may encompass AT utilization in the classroom, it is not a panacea. Absence of common sense, constrained preparation, access to help administrations, inadequate financing, and absence of educator time are regularly referred to issues concerning the execution of AT (Ault, Bausch, & McLaren, 2013; Flanagan, Bouck, & Richardson, 2013; Morrison, 2007; Okolo & Diedrich, 2014). Analysts have noticed that there is as yet a gigantic hole between the capability of AT and the amount it really helps (Burne, Knafelc, Melonis, & Heyn, 2011).

AT can diminish learners' reliance on others to read, write, and sort out their work (MacArthur, Ferretti, Okolo, & Cavalier, 2001; Mull & Sitlington, 2003). At the point when given powerful methodology guidance, illustrating projects and idea mapping programming can help with arranging, and word preparing, spell check, word forecast, and speech acknowledgment can offer help for translation and modification or revision (MacArthur, 2009). While AT can bolster struggling students, MacArthur (2009) alerts that innovation without anyone else's input has little effect on learning. With the goal for learners to benefit from the innovation, teachers must have a comprehension of AT and how to insert it by following the best guidance (Batorowicz, Missiurana, & Pollock, 2012; Lee & Vega, 2005; Marino, Marino, & Shaw, 2006; Michaels & McDermott, 2003).

Types of available assistive technology tools

AT has been designed for the most part been connected to PC equipment and programming and electronic gadgets. Notwithstanding, numerous AT instruments are currently accessible on Websites. AT devices that help children with SEN include:

Condensing expanders

Utilized with word handling, these product programs enable a client to make, store, and re-utilize condensings for regularly utilized words or expressions. This can spare the client keystrokes and guarantee legitimate spelling of words and expressions that have been coded as shortened forms.

Elective keyboards

These design of programmable keyboard have exceptional overlays that alter the appearance and capacity of a standard used keyboard. Understudies who have LD or experience difficulty composing may profit by customization that decreases input decisions, bunches keys by shading/area, and adds designs to help perception.

Audio books and publications

Recorded books enable clients to tune in to and are accessible in an assortment of organizations, for example, audiocassettes, discs, and MP3 downloads. Extraordinary playback units enable clients to search, and bookmark pages and parts. Membership administrations offer broad electronic library accumulations.

Electronic math work sheets

Electronic math worksheets are programming tools or also known as software that can enable a client to sort out, adjust, and work through math issues on a PC screen. Numbers that show up onscreen can likewise be perused so anyone might hear by means of a discourse synthesizer. This might be useful to individuals who experience difficulty working on math issues with pencil and paper.

Freestyle database programming

Utilized related to word preparing or other programming, this instrument enables the client to make and store electronic notes by “writing down” applicable data of any length and regarding any matter. Users can later recover the data by composing any piece of the first note.

Graphic coordinators and sketching out

Graphic coordinators and sketching out projects help clients who experience difficulty arranging and plotting data as they start a composition venture. This sort of program will give clients “a chance to dump” data in an unstructured way and later encourages them to compose the data to fit classifications and requests.

Data/information management

This kind of device enables the user to design, sort out, store, and recover a timetable, assignment list, contact information, and other data in electronic frame. Individual information administrators might be versatile, hand-held gadgets, PC programming, or a blend of those instruments cooperating by “sharing” information.

Talking spell checkers and electronic dictionaries

Talking spell checkers and electronic dictionaries can help a poor speller select or identify appropriate words and correct spelling errors during the process of writing and proofreading. Talking devices “read aloud” and display the selected words onscreen, so the user can see and hear the words.

Word-prediction software

Word prediction programming is able to assist learners amid word handling by “anticipating” a word the clients plan to type. Expectations depend on spelling, structure, and continuous/ongoing use. This prompts children who battle with writing to utilize legitimate spelling, language, and word decisions, with fewer keystrokes.

Other innovation instruments for learning

Different types of innovation are intended to encourage all learners, incorporating those with SEN, to enhance their learning progression. These advancements contrast to some degree from AT yet merit referencing. Instructional programming is utilized to show explicit scholastic aptitudes (such as reading and writing) or subject matter (for example, history and science). It varies from AT in that it gives guidance as opposed to ignoring the challenging topic. In this methodology, AT is frequently incorporated with instructive materials and can be tweaked to assist learners with SEN be effective with the general educational programs (Kristin & Marshall, 2009).

Overcoming the Challenge

Enhanced Learning by Staff Training

In a substantial scale overview of study about almost seventy five percent of respondents demonstrated that enhanced staff training and learning were the most critical way that could be implement to advance innovation utilization (Okolo & Diedrich, 2014). AT gadgets and administrations must be combined with setting suitable guidance from well trained educators (Specht, Howell, & Young, 2007), as learners’ advantage from usage of AT is straightforwardly identified with the learning, abilities, and miens of a specialized curriculum instructors (Michaels & McDermott, 2003). While instructors recognize the capability of assistive innovation, they may feel overpowered by the obligation of comprehension and utilizing this innovation with their learners (Lee & Vega, 2005; Ludlow, 2001).

Improve Coordination of Assistive Technology

Numerous instructors feel that they come up short on the information and support to all the more completely coordinate AT into the educational modules (Okolo & Diedrich, 2014). This is not a new thing as given with 33% of a custom curriculum programs overviewed by Judge and Simms (2009) tended to assistive innovation, and couple of seminars or expert improvement openings exist to persistently bolster educators’ utilization of assistive innovation amid guidance (Lee & Vega, 2005; Ludlow, 2001; Michaels & McDermott, 2003). Instructors’ utilization and comprehension of AT may increment when given powerful

guidance amid pre-benefit training or expert advancement openings (Flanagan et al., 2013; Lee & Vega, 2005). General instructors and uncommon teachers need to get comfortable with assistive and instructional innovation so they can insert this innovation inside their guidance to address the issues of every learner (Chmiliar, 2007; Chmiliar & Cheung, 2007; Flanagan et al., 2013).

Preparing Learners

While suggesting the utilization of AT, one must think about how preparing can accommodate learners, guardians, and educators to wind up skilful with the innovation, and also natural factors that will keep on supporting the youngster in utilizing innovation (Specht, Howell, & Young, 2007). Subsidizing ought to be assigned for the training of instructors to viably encourage assistive innovation usage (Burne, Knafelc, Melonis, & Heyn, 2011), and all teachers who bolster individual learners ought to be proficient in that child's assistive innovation and have the capacity to implant utilization of the innovation with guidance (Nelson, 2006; Okolo & Diedrich, 2014). PCs should not be confined to an explicit branch of knowledge, and innovation implementation ought not exclusively happen inside a PC lab; instead, assistive and instructional innovation ought to be a basic piece all things considered and the use of these devices ought to be incorporated with the educational modules. Schools ought to urge instructing staff to accept the job of innovation co-ordinators as they comprehend the requests of the educational modules and might be best prepared to discover free or minimal effort instructive answers for helping learners to meet curricular needs.

CONCLUSION

In conclusion, educators need to be well equipped and confident with information system application (as instructional technology) in order to deliver and improve performance among learners especially in those with special education needs (SEN). It is also important to provide a coherent focus across the entire education organization in order to develop and support rigorous and relevant instruction and learning for all students. Based on previous studies, research can focus on further researching individual factors but also, and in particular, by understanding combinations of factors. There is no single best instructional technology or e-learning design; therefore all the factors related to instructional technology management must be taken into consideration to enhance performance among teachers and learners through AT applications.

REFERENCES

- Abandonment and Dropout of E-Learning: Dilemma and Solutions (2003). James Madison University. Retrieved from <http://www.tjaylor.net/research/Departure-Abandonment-Dropout-of-Elearning-Dilemma-and-Solutions-James-Madison-University-2003.pdf>
- Americans with Disabilities Act (ADA). (2015). November 17, 2015.
- Ault, M. J., Bausch, M. E., & McLaren, E. M. (2013). Assistive technology service delivery in rural school districts. *Rural Special Education Quarterly*, 32(2), 15-22. Retrieved from <http://search.proquest.com/docview/1420524203?accountid=6180>
- Batorowicz, B., Missiuna, C. A., & Pollock, N. A. (2012). Technology supporting written productivity in children with learning disabilities: A critical review. *Canadian Journal of Occupational Therapy*, 79(4), 211-224. doi:10.2182/cjot.2012.79.4.3
- Burne, B., Knafelc, V., Melonis, M., & Heyn, P. (2011). The use and application of assistive technology to promote literacy in early childhood: A systematic review. *Disability and Rehabilitation: Assistive Technology*, 6, 207-213. doi: 10.3109/17483107.2010.522684
- Chmiliar, L. (2007). Perspectives on assistive technology: What teachers, health professionals and speech language pathologists have to say. *Developmental Disabilities Bulletin*, 35(1), 1-17.
- Chmiliar, L., & Cheung, B. (2007). Assistive technology training for teachers – Innovation and accessibility online. *Developmental Disabilities Bulletin*, 35(1), 18-28.
- David, N. (2013). Six (6) technology challenges facing education. *Ed Tech Trends*, News. 06/04/13
- Dell, A., Newton, D., & Petroff, J. (2012). *Assistive technology in the classroom: Enhancing the school experiences of students with disabilities* (2nd ed.). Boston, MA: Pearson.
- Department for Education and Skills. (2001). *Special Educational Needs Code of Practice*. London: DfES.
- Dhanarajan, G. (2001). Distance Education: Promise, Performance and Potential. *Open Learning*, 16(1), 61-68. Retrieved from http://pdfserve.informaworld.com/106451_750426099_713688418.pdf
- Eastmond, D. (2000). Realizing the promise of distance education in low technology countries. *Educational Technology Research and Development*, 48(2), 100-111.
- Evans, R. (2005). *Explaining low learner participation during Interactive Television Instruction in a developing country context*. (Ph.D Dissertation, University of Pretoria). Retrieved from <http://upetd.up.ac.za/thesis/submitted/etd-02282005-081708/unrestricted/00front.pdf>

- Flanagan, S., Bouck, E. G., & Richardson, J. (2013). Middle school special education teachers' perceptions and use of assistive technology in literacy instruction. *Assistive Technology*, 25(1), 24-30. doi:10.1080/10400435.2012.682697
- Heeks, R. (2002). Information Systems and Developing Countries: Failure, Success and Local Improvisations. *The Information Society*, 18(2), 101-112. Retrieved from http://pdfserve.informaworld.com/167133_750426099_713856778.pdf
- Higgins, E. L., & Raskind, M. H. (2000). Speaking to read: The effects of continuous vs. discrete speech recognition systems on the reading and spelling of children with learning disabilities. *Journal of Special Education Technology*, 15(1), 19-30.
- Judge, S., & Simms, K. A. (2009). Assistive technology at the pre-service level. *Teacher Education and Special Education*, 32, 33-44.
- Lee, Y., & Vega, L. A. (2005). Perceived knowledge, attitudes and challenges of AT use in special education. *Journal of Special Education Technology*, 20, 60-63.
- Levy, Y. (2007). Comparing dropouts and persistence in E-Learning courses. *Computers & Education*, 48(2), 185-205.
- Lou, Y., Abrami, P. C., & d'Apollonia, S. (2001). Small group and individual learning with technology: A meta-analysis. *Review of Educational Research*, 71(3), 449-521.
- Loveless, A., & Ellis, V. (2001). *ICT, pedagogy and the curriculum: Subject to change*. London, UK: Routledge/Falmer.
- Ludlow, B. L. (2001). Technology and teacher education in special education. Disaster or deliverance? *Teacher Education and Special Education*, 24, 143-163. doi:10.1177/088840640102400209
- MacArthur, C. (2009). Reflections on research on writing and technology for struggling writers. *Learning Disabilities Research & Practice*, 24(2), 93-103. doi: 10.1111/j.1540-5826.2009.00283.x
- MacArthur, C. A., Ferretti, R. P., Okolo, C. M., & Cavalier, A. R. (2001). Technology applications for students with literacy problems: A critical review. *The Elementary School Journal*, 101(3), 273-301. doi:10.1086/499669
- Marino, M. T., Marino, E. C., & Shaw, S. F. (2006). Making informed assistive technology decisions for students with high incidence disabilities. *Teaching Exceptional Children*, 38(6), 18-25.
- Michaels, C. A., & McDermott, J. (2003). Assistive technology integration in special education teacher preparation: Program coordinators' perceptions of current attainment and importance. *Journal of Special Education Technology*, 18, 29-41.

- Morrison, K. (2007). Implementation of assistive computer technology: A model for school systems. *International Journal of Special Education*, 22(1), 83-95.
- Mull, C. A., & Sitlington, P. L. (2003). The role of technology in the transition to postsecondary education of students with learning disabilities. *Journal of Special Education*, 37(1), 26-32. doi: 10.1177/00224669030370010301
- National Research Council. (2000). *How people learn: Brain, mind, experience and school*. Washington, DC: Author.
- Nelson, B. (2006). On your mark, get set, wait! Are your teacher candidates prepared to embed assistive technology in teaching and learning? *College Student Journal*, 40(3), 485-494.
- O'Connor, C., Sceiford, E., Wang, G., Foucar-Szocki, D., & Griffin, O. E. (2003). *Departure*.
- Okolo, C. M., & Diedrich, J. (2014). Twenty-five years later: How is technology used in the education of students with disabilities? Results of a statewide study. *Journal of Special Education Technology*, 29(1), 1-20.
- Pearson, M. (2003). Online searching as apprenticeship: Young people and web search strategies. In G. Marshall & Y. Katz (Eds.), *Learning in school, home and community: ICT for early and elementary education* (pp. 31-40). London, UK: Kluwer Academic.
- Rajesh, M. (2003). A Study of the Problems Associated with ICT Adaptability in Developing Countries in the Context of Distance Education. *The Turkish Online Journal of Distance Education*, 4(2). Retrieved from <http://tojde.anadolu.edu.tr/tojde10/articles/Rajesh.htm>
- Raskind, M. H., & Higgins, E. L. (1999). Speaking to read: The effects of speech recognition technology on the reading and spelling performance of children with learning disabilities. *Annals of Dyslexia*, 49, 251-281.
- Romisowski, A. (2004). How's the E-Learning Baby? Factors Leading to Success or Failure of an Educational Technology Innovation. *Educational Technology*, 44, 1, 5-27. Retrieved from http://BooksToRead.com/etp/elearning_failure_study.doc
- Sehrt, M. (2003). E-Learning in the Developing Countries: Digital Divide into Digital Opportunities. *UN Chronicle Online*, 4(3). Retrieved from <http://www.un.org/Pubs/chronicle/2003/issue4/0403p45.asp>
- Specht, J., Howell, G., & Young, G. (2007). Students with special education needs and their use of assistive technology during the transition to secondary school. *Childhood Education, International Focus Issue*, 83, 385-389. doi:10.1080/00094056.2007.10522956
- Watson, A. H., Ito, M., Smith, R. O., & Andersen, L. T. (2010). Effect of assistive technology in a public school setting. *American Journal of Occupational Therapy*, 64, 18-29. doi: 10.5014/ajot.64.1.18

- Winnie, O. (2015). Special Education Technology Evaluation Guide. http://www.edmentum.com/resources/brochures/special-education-technology-evaluation-guide?utm_source=Edmentum_Blog&utm_medium=Blog&utm_campaign=2015_November
- Yelland, N. (2003). Learning in school and out: Formal and informal experiences with computer games in mathematical contexts. In G. Marshall & Y. Katz (Eds.), *Learning in school, home and community: ICT for early and elementary education* (pp. 3-12). London, UK: Kluwer Academic.