

Summary Table 6: BARRIERS IN ICT & ICT/AT EDUCATION

Research Papers

Citation	Topic	Research design	Results	Conclusion	Link
Baker, P. & Bellorde, Ch. (2004). Adoption of Information and Communication Technologies: Key Policy Issues, Barriers and Opportunities for People with Disabilities. In Proceedings of the 37th Hawaii International Conference on System Sciences, pp 1-10.	This paper presents preliminary results of policy research designed to develop a framework for assessing the status quo, developing inclusive policy initiatives, and evaluating the efficacy of the research approach	First phase of a 4 phases project. collection and analysis of existing, proposed, and developing wireless communication and information technologies, policies and practices as they impact on persons with disabilities	<p>Less than 35% of PwD in US are employed and/or involved in community life, even though they stated that life has improved.</p> <p>There is some US legislation, regulations and provisions for accessibility – mainly for physical barriers</p> <p>Issues identified (barriers):</p> <ul style="list-style-type: none"> - Affordability of assistive technology products - Definition of telecommunication/information services - Disability divide/access/awareness - E-911 (wireless) call accuracy - Inter-agency coordination - New Freedom Initiative - Re-prioritizing the nation's disability rehabilitation research agenda - Spectrum allocation/availability - Universal design and product development - Wireless device 	<p>The concept of disability is changing in the United States. Broader perception of PwD UD- for as many users as possible.</p> <p>Research should sustain the idea that AT is more than a specific product with a narrow market and financial burden to manufacturers. Create effective advertising campaign.</p> <p>For PwD AT & telecommunications are often more a necessity than a convenience</p> <p>Larger market - incentives</p>	http://scholar.google.com/citation?id=k5qOBUEAAAJ&citation_for_view=k5qOBUEAAAJ:hqQjcs7Dif8C

			<p>(in)compatibility</p> <p>Barriers to access/use:</p> <ul style="list-style-type: none"> - Awareness/Proficiencies - Economic barriers - Terminology incompatibilities <p>Opportunities</p> <ul style="list-style-type: none"> - Policy/Regulatory interventions - Market Mechanisms - Outreach/Awareness 		
<p>Copley, J. & Ziviani, J. (2004). Barriers to the use of assistive technology for children with multiple disabilities. <i>Occupational Therapy International</i>, 11(4), 229-243</p>	<p>Barriers were found to include lack of appropriate staff training and support, negative staff attitudes, inadequate assessment and planning processes, insufficient funding, difficulties procuring and managing equipment, and time constraints. A team model for assistive technology assessment and planning is proposed to</p>	<p>Literature review research. ERIC, CINAHL and Medline databases were searched using the keywords of AT, children and multiple disabilities.</p>	<p>Benefits of AT use (identifies in literature):</p> <ul style="list-style-type: none"> - Allow tasks & functions - Enabling mastery or control over their environment (incl. play and daily living). - Facilitation of independence - Ability to make choices and direct one's own care with the use of AAC - Enhanced social interactions - Increased motivation and self-esteem - Skill acquisition and enhancement, (such as handwriting, motor skills, reading, visual attention and perception, and maths skills) - Cognitive benefits: understanding of the cause-effect relationship, increased attention span, and problem solving ability. - Improvements in general 	<p>Overcoming barriers:</p> <ul style="list-style-type: none"> - Training & support (recommendations of staff, improvement of formal training, training of families, consultation) <p>Assessment and implementation plans (match needs with AT, gather assessment data, resources available to teachers, detailed implementation plans, team</p>	<p>http://onlinelibrary.wiley.com/doi/10.1002/oti.213/abstract</p>

	<p>optimize the educational goal achievement of children with multiple disabilities.</p>		<p>academic behaviour such as work habits and productivity</p> <ul style="list-style-type: none"> - New opportunities and reveal potential of children - parents and teachers raising expectations <p>Problems in effective AT application:</p> <ul style="list-style-type: none"> - Abandonment of devices (due to considered unsuitable, interaction factors associate with people, services and systems-processes) - Staff training and attitudes (inadequate training, staff rejection of AT, staff attitudes) - Assessment issues (no guidelines, environments, lack of collaboration) - Planning issues (for AT use, lack of systematic implementation, problems fro long-term service) - Funding issues (high cost, maintenance cost) - Equipment issues (access to equipment, lack of loan, lack of portability, repair) - Time constraints (training, teachers, therapists, moving from one setting to other) - assessment process, guide 		
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			and goals)		
<p>Layton, N. (2012). Barriers and Facilitators to Community Mobility for Assistive Technology Users. <i>Rehabilitation Research and Practice</i>, 2012, 1-10. doi:10.1155/2012/45 4195</p>	<p>The aim of the study is to identify consumer perspectives regarding barriers and facilitators to optimal mobility for a heterogeneous population of impaired Victorians who use assistive technology in their daily lives.</p>	<p>Survey to investigate the impact of AT solutions upon the lives of adults with a disability. 60- question survey, to capture a diverse sample in order to elicit a wide range of AT user experience (in paper and e-form). 100 participants, AT users, 18y+.</p>	<p><i>Demographics:</i></p> <ul style="list-style-type: none"> - 60 separate diagnoses, including 60% with physical disabilities, 14% with multiple conditions, and 13% with sensory disabilities. The remaining 13% did not complete this question. - 59% F & 41%M - 45–64 years (39%) or 25–44 years (20%), with 13% over the age of 65 (28% did not complete this question). <p><i>Participation in Life Areas Enabled by AT Solutions:</i></p> <ul style="list-style-type: none"> - High utilization of three elements of an AT solution: devices, environmental intervention, and personal care. - All 100 participants utilized individualised AT solutions to participate in multiple life areas, describing over 900 instances of engagement across the ICF activity and participation chapters <p><i>Facilitators and Barriers to Community Mobility</i></p> <ul style="list-style-type: none"> - Elements of AT solutions were repeatedly seen to be effective in more than one 	<p>Survey participants represented a small but varied cohort of adults with disability and provided evidence of the efficacy of AT devices, environmental interventions, and personal care. The voices of these participants demonstrated the capacity of many “user experts” to name barriers, identify plausible facilitators, and identify likely impacts and outcomes. These impacts and outcomes align well with broad conceptualizations of life such as those provided by ICF Activities and Participation Chapters. Mobility is not seen as an end in</p>	<p>http://www.hindawi.com/journals/rerp/2012/454195/</p>

			<ul style="list-style-type: none"> - area of activity - situations where barriers in one area led to a need for more supports or enablers in other contexts - dissatisfaction and frustration with current participation levels - Over 90% of participants identified ways in which their enablers could or should change in future - participants felt unable to action needed changes due to a lack of resources and lack of responsiveness in the government equipment funder or lack of control over the external environment. - Enablers identified were often mainstream tech and therefore not funded 	<p>itself, rather a necessary capacity in order to participate in occupations of meaning. The evidence presented supports the premise that combining interventions into tailored AT solutions is effective as this is in fact how they are used in life. Also, that a lack of joined up service provision exists along with significant under-resourcing of government equipment provision schemes</p>	
<p>Scherer, M., Sax, C., Vandbiervliet, A., Cushman, L.A. & Scherer, J.V. (2005). Predictors of assistive technology use: The importance of personal and psychosocial factors. <i>Assistive Technology</i>, 27(21). 1321-1331</p>	<p>The aim of the study is to validate an assistive technology (AT) baseline and outcomes measure and to quantify the measure's value in determining the best match of</p>	<p>Prospective multi-cohort study. The development and validation of the ATD PA (Assistive Technology Device Predisposition Assessment) followed the recommended steps for test/measure construction as follows: (1) concept definition</p>	<p>Results provided evidence on the Internal consistency and reliability of the tool and the predictive validity. Barriers and facilitators can be predicted only when users views are measured. As participant stated they consider important the opportunity to talk about areas that are too personal,</p>	<p>The need for achieving and documenting assistive technology outcomes cannot be overstated. There are limited fiscal and personnel resources for meeting the growing number of consumers with</p>	<p>http://informahealthcare.com/doi/abs/10.1080/09638280500164800</p>

	<p>consumer and AT considering consumer ratings of their subjective quality of life, mood, support from others, motivation for AT use, program/therapist reliance, and self-determination/self-esteem.</p>	<p>and clarification, (2) draft of items and response scales, (3) pilot testing, and (4) determination of measure quality and usefulness. The underlying MPT model/theory emerged from a grounded theory research study. To operationalize the model and theory, an assessment process consisting of several instruments was developed from the experiences of technology users and non-users through participatory action research. Items emerged from characteristics differentiating the actual experiences of users and non-users.</p>	<p>have their views being heard, be helped to avoid “one-size-fits-all” mentality, and be helped to organized and focus on the entire picture when assessing AT usages situations</p>	<p>widely varying needs; therefore, the better the match of AT and user, the more effective is the use of these limited resources. Rehabilitation professionals, by virtue of their positions, often provide an essential link between the consumer and the assessment and acquisition of assistive technology.</p>	
<p>Almekhalfh, A.G. & Tibi, S. (2012). The Use of Assistive Technology for People with Special Needs in the UAE <i>Journal of International Special Needs Education</i>,</p>	<p>In spite of the rapid changes taking place in all sectors in the United Arab Emirates (UAE), the research studies investigating AT</p>	<p>Participants were special education teachers from special needs centers in the United Arab Emirates. These participants were randomly selected from special needs centers around the country</p>	<p>Results showed that different types of AT devices existed in the classrooms which were available for students of different of disabilities. In addition, results revealed different types of barriers hindering the use of AT. These include:</p>	<p>The most prominent barriers revolved around issues of professional development, availability of devices, administration support and technical</p>	<p>http://eric.ed.gov/?id=EJ978684</p>

<p>15(1), 56-71</p>	<p>for students with special needs in the (UAE) are limited, if any. Quantitative and qualitative data collection methodology were used to explore the AT tools, services, barriers, and professional development available in the UAE special needs centers.</p>	<p>representing five out of the seven UAE Emirates (Ajman, Ras-Al khaimah, Sharjah, Dubai & Fujairah) . 56 special education teachers participated in the study. In addition, 8 female special education teachers and 2 male speech therapists were randomly selected for the focus group interviews. Six of the eight special education teachers work in special needs centers and were specialized in teaching students with hearing impairment and students with mental retardation. The other two special education teachers teach students with learning disabilities in special classrooms in the public schools. Data were collected from two different sources: Focus group interviews (qualitative) and a questionnaire (quantitative), and analysed based on a mixed methods</p>	<ul style="list-style-type: none"> - Professional Development (no in-service training, not enough training) - Equipment Availability (Cost and difficulty to obtain AT, not available in school, Mobility issues: Difficult to move around equipment and tools) - Administration (The current curricula do not include outcomes for AT & Administration regulations do not mandate the use of AT, and Administrators do not support the use of AT) - Support (Lack of technical assistance, School environment is not technically prepared for the use of AT, AT available now is often damaged and needs maintenance) <p>Results may shed light on the use of AT in the UAE, teachers' perceptions towards this use and barriers impeding such use. Teachers collectively supported the use of AT.</p>	<p>support. In addition, there were some barriers identified as the causes of the negative perceptions held by special needs teachers towards their special needs students and their parents. These barriers were mainly related to issues of awareness of AT devices and their impact on students' performance. Furthermore, students' lack of knowledge and expertise in using the devices and maintaining them was perceived by teachers as a hindrance in the effective and efficient use of the AT devices. Subsequently, adequate selection and use of AT when accompanied with professional training and administrative and technical support allow individuals</p>	
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		<p>approach involving descriptive statistics for the quantitative data and grounded theory methods for the qualitative data.</p>		<p>who use AT to enhance their performance. Ultimately, the aim behind using AT is to overcome performance problems as much as possible. Recommendations: 1- Increase public awareness to AT devices and its impact on people's lives. 2- Advocate for the right of individuals with special needs to use AT 3- Draft laws specific to the right of individuals to be provided with AT devices and services. 4- Provide professional training for students using AT devices. 5- Provide professional development and follow-up for service providers in the area of AT. 6- Educate parents as</p>	
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				to the importance of AT to their children's performance, and provide opportunities for parents to seek help when facing difficulties or queries regarding AT. 7- Design specifically for the Arabic context (language and culture).	
Wilcox, J. (2010). Young Children With Physical Disabilities Caregiver Perspectives About Assistive Technology. <i>Infants & Young Children</i> 23(3), 169–183	Caregiver reports of problematic activities/routines with their young children with physical disabilities and types of assistive technology used as solutions were investigated in this study. In addition, caregiver competence with assistive technology use and ways in which caregivers received information and training were also	The research was designed to <ul style="list-style-type: none"> • examine which activities/routines are most problematic for these children; • determine to what extent caregivers find solutions to their problems and to what degree assistive technology is used as a solution; • identify the amount of information and training caregivers receive about assistive technology and the sources of that information; • examine the impact of these factors on 	Results on: <ul style="list-style-type: none"> - Caregivers' perceptions about daily activities and routines - Solutions and use of assistive technology - Amount and sources of information and training - Caregivers' report of finding solutions and using assistive technology <p>Training, resources and AT competence of caregivers are identified as difficulties and barriers in the solutions found and implementation of AT.</p>	Early intervention providers play instrumental roles in teaching caregivers about assistive technology use. When providers and caregivers work together to use AT, caregivers report feeling competent particularly in identifying solutions for facilitating their children's involvement in activities/routines and in using assistive technology to do so.	http://journals.iww.com/iycjournal/Fulltext/2010/07000/Young Children With Physical Disabilities .2.aspx

	examined.	<p>caregiver-reported competence levels.</p> <p>Web-based survey. A total of 549 nationally distributed caregivers of infants or toddlers with disabilities responded anonymously to questions focused on their use of assistive technology within their daily activities/routines. The survey consisted of a combination of forced choice and open-ended questions related to 10 activities/routines in which infants and toddlers typically participate</p>		<p>The most competent caregivers in this study reported receiving a lot of information and training from their early intervention providers, emphasizing the important role that early intervention providers play as a source of information about AT for children’s caregivers.</p>	
<p>Mavrou, K. (2011). Assistive Technology as an Emerging Policy and Practice: Processes, Challenges and Future Directions. <i>Technology and Disability</i>, 23(1), 41-52.</p>	<p>This paper aims to describe the policies and procedures of the use of assistive technology (AT) to support education and social inclusion of children with disabilities in Cyprus. The paper initially</p>	<p>The study is based on a qualitative research paradigm, which can be described as a case study action research approach.. This work is an attempt to understand, improve and reform practice in relation to AT interventions. Moreover, case study has been considered as the most</p>	<p>Findings highlighted six areas related to AT in Cyprus, that need further research and development: teacher training and support for system use; consistency of and between people involved (especially educators and therapists); ongoing assessment and followup procedures; multidisciplinary of support teams in and out of</p>	<p>In general, the need for an effective AT policy framework is evident. Existing legislation provisions have been designed and decided without taking into consideration parameters of technology in the education of children with disabilities. The</p>	<p>http://iospress.metapress.com/content/a4g77258n445157w/</p>

	<p>presents the setting of the use of technology in inclusive and special education, as recently developed. Then, case studies from different educational settings (primary inclusive education, primary education, special unit, secondary, inclusive education and special school) are discussed aligned in the following axes: demographical characteristics, educational setting, type of difficulties and characteristics of disability, procedures of referral and assessment for AT, development and implementation of AT for</p>	<p>appropriate methodology at this stage, since the number of pupils/users of AT in the country is quite limited and assessment and implementation of AT is a complex and highly individualised process. Consequently, research data available concerned individual pupils' needs, reactions, experiences etc. Data collection involved documents and participants' profile records, informal interviews with pupils, educators and parents and the researcher's research diary and personal experiences.</p>	<p>school; home use of systems and devices (related to funding); technical support, development and maintenance</p> <p>The underdevelopment of these areas seems to result to the main barriers in the effective use of ICT and ICT/AT. More specifically barriers/challenges are specified as follows:</p> <ul style="list-style-type: none"> -Assessment: The process of matching person and technology remains complex because people's expectations of and reactions to technologies are complex. Lack of multidisciplinary -Professionals: Lack of awareness, insufficient training, negative stances -Resources: limited available resources even when funding is available (eg. approval of additional equipment, technical support , training etc) 	<p>fact that AT is actually framed and absorbed by these existing provisions ignores particular and important factors, and also creates contradictory statements and issues. Regulation and legislation coupled with technology practice has been an important policy tool in making ICT available to the public and to the disability community.</p>	
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	communication, present and future threats, ethical considerations and challenges.				
Wong, M. E. & Cohen, L. (2011). School, family and other influences on assistive technology use: Access and challenges for students with visual impairment in Singapore. <i>British Journal of Visual Impairment</i> , 29(2), 130-144. doi: 10.1177/0264619611402759	This study investigates the barriers and challenges to the use of assistive technologies with students with visual impairments in Singapore from a special school context.	Students and teachers from the Lighthouse School were recruited as respondents for the project. Semi-structured qualitative interviews were conducted with 11 students ranging from ages 8 to 13 years. The enrolment of students with visual impairments totalled 34 students with visual impairments including those with additional disabilities. Teachers identified students only with visual impairments and respondents who gave assent and received parental consent participated.	<ul style="list-style-type: none"> -Divergent range of understanding and use of assistive technology. By large, students had limited skills, concepts and use of assistive technology. -Students displayed a diversity of skills in technology -A common feature of the students' experiences was the use of assistive technology with the teaching of English-related subjects from basic keyboarding skills to an interactive lesson of writing, vocabulary building and dictation. Without this opportunity, many of the students would go through school with little exposure to the potential of assistive technology. Judging from their comments, these lessons are welcomed as students express their eagerness for learning with technology -With discrepancy of skills 	The findings indicate that the assistive technology usage in school is not adequately provided for the students with visual impairments. Current school practices indicate an inconsistency with how assistive technology is delivered and incorporated as a means of accessing information as well as a tool to complement teaching and learning. Evidence show that the larger teacher population in the school is not sufficiently aware of the benefits of assistive technology. Parental involvement is emerging as a vital facilitator in laying	https://www.google.com.cy/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCQQFjAA&url=http%3A%2F%2Frepository.nie.edu.sg%2Fbitstream%2F10497%2F13922%2F3%2FBJVI-29-2-130_a.pdf&ei=is8iVeWFFaqs7Aa5yIHoCw&usg=AFQjCNGafJneIPDI Pugjvotvs_0jGZ7cDQ&bvm=bv.89947451.d.ZGU

			<p>noted amongst students, the unpredictable scheduling of assistive technology classes points towards further inconsistency</p> <ul style="list-style-type: none"> -Single computer lab often held for non-computer lessons -Family and External Influences to Assistive Technology 	<p>down the fundamental knowledge while siblings and friends represent potential resources. Family and social networks cannot be undermined in expanding and reinforcing opportunity and skill where formal channels are inadequate. In general The assistive technology experiences of students with visual impairments have surfaced limitations in preservice and inservice teacher training; weaknesses in school and social services collaboration in assistive technology. Fundamental provision and training in assistive technology is imperative if students with visual impairments are not</p>	
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				to be further isolated and have a chance to participate in an ICT intensive society in Singapore	
Gustafson, D.L. & Penton, V. (2014). Access to Assistive Technology and Single Entry Point Programs. <i>Canadian Journal of Disability Studies</i> , 3(1). online	This mixed method case study sought to explore the barriers consumers faced in acquiring and being satisfied with AT in Newfoundland and Labrador, an Atlantic Canadian province characterized by a small population dispersed over a large island and remote mainland.	<p>Study goals:</p> <ol style="list-style-type: none"> 1. assess their experiences, opinions and satisfaction levels; 2. assess their attitudes toward three components of an SEP system as part of a more integrated approach to AT service provision. <p>Case study – semistructured interviews wit AT service providers & consumer (PwD) survey</p>	<p>Benefits of AT and level of satisfaction</p> <ul style="list-style-type: none"> -Service providers agreed that AT promotes consumer independence and more equitable access to many aspects of life and social engagement -Most consumers reported overall satisfaction with their AT -Level of satisfaction and responses on unmet needs are correlated. <p>Barriers</p> <ul style="list-style-type: none"> -Lack of consistency in the quality and quantity of AT information; -Insufficient number and availability of trained personnel; -Lack of qualified people to conduct assessments; and -High cost of AT and AT assessments and lack of funding support. <p>AT and self-reported health and daily living</p> <ul style="list-style-type: none"> -Consumers that did not report any unmet needs 	<p>In general</p> <p>a) consumers and service providers dissatisfied with the adequacy of existing programs and services; (b) agencies often focused on serving individuals with a specific disability operating with insecure funding sources and staffed by individuals with limited training; and (c) a system characterized by limited flexibility and complex and inter-related barriers to providing appropriate AT, support and training to meet the increasing demand.</p> <p>Partnerships between governments and community-based</p>	https://www.google.com.cy/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CB8QFjAA&url=http%3A%2F%2Fcjds.uwaterloo.ca%2Findex.php%2Fcds%2Farticle%2Fdownload%2F90%2F250&ei=OOIv dOaLMXf7AafiIDICg&usg=AFQjCNFLWeiggB0sz8wIU F8RYIdLniZMcQ&bvm=bv.89947451,d.ZGU

			indicated excellent or good health -The overall health of consumers with disabilities was shown to be related to lack of appropriate AT	agencies will be an essential feature of any plan to move forward	
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Theoretical Papers

Citation	Topic	Commentary/narration/ review	Conclusion	Link
<p>Lazar, J. & Jaeger, P. (2011). Reducing Barriers to Online Access for People with Disabilities. <i>Issues in Science & Technology</i>. Winter, 69-82.</p>	<p>The Internet is not living up to its enormous potential to enhance and broaden the lives of persons with disabilities. Closing policy loopholes and enforcing existing rules would make a world of difference.</p>	<p>Inaccessible web is excluding PwD. Major access barriers to websites</p> <ul style="list-style-type: none"> - Challenging interfaces (navigation, chat rooms, web conferencing etc – no accessible input) - Conceptions of disability under the law, exemptions from compliance, limited enforcement, and the inability of the law to keep pace with technological development all hinder the impact that the laws have had thus far. - Number of inaccessible governmental websites even though governments adopt accessibility policies and regulations. However, compliance with and enforcement of these laws have not been very effective. - No specific governmental agency in charge of accessibility – no active monitoring mechanism (especially less clear situation for web – than build environment & services) <p>Potentials of internet for PwD</p> <ul style="list-style-type: none"> - Accessibility features in smartphones - Means of communication and 	<p>The goals and intended outcomes of accessibility deserve greater consideration than they receive. The most important goal is increased access to the information, communication, and services that are increasingly central to education, employment, civic participation, and government. Accessibility laws and regulations have the potential to provide incentives for the creation of new technologies, to make existing technologies usable by a wide range of users beyond people with disabilities, to involve people with disabilities in the development of regulations and technologies, to foster the creation of better-quality tools for developers, to</p>	<p>https://www.google.com.cy/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CCAQFjAA&url=http%3A%2F%2Fwww.accessola2.com%2Fsuperconference2013%2Fsessions%2F1224-1.pdf&ei=5liQU9XdDlyK4gSA2YGQCg&usg=AFQjCNHgJQ_w47OulEfvIYodwLqFNjYjVA&bvm=bv.68445247,d.bGE</p>

		<p>interaction through online communities</p> <ul style="list-style-type: none"> - Enormous array of new ways to pursue education and employment - Long term promoting social inclusion - Promising development in policy in the US (reference to memos and guidelines issued) <p>Accessibility from the start reduces extra cost in time and money</p>	<p>make evaluation easier, and to educate the general populace about the importance of equal access for people with disabilities.</p> <p>Need of a chief accessibility officer/agency in government.</p> <p>Without changes such as these, people with disabilities will not be able to fully participate in online opportunities in education, employment, communication, and government.</p>	
<p>Alper, S. and Raharinirina, S. (2006). Assistive Technology for Individuals with Disabilities: A Review and Synthesis of the Literature. Journal of Special Education Technology, 21(2), 47-64</p>	<p>A comprehensive review and a systematic analysis of published reports of assistive technology and skill acquisition of persons with disabilities. Uses of assistive technology, its benefits and obstacles, are reviewed</p>	<p>A brief review/summary of the AT Act of 1998/2004, and the definitions of AT devices & services included in the Act. The relationship of AT and the quality of life of PwD is also highlighted in the Act. IDEA (1997/2004) also provides for the need of the use of AT and that IEPs should consider AT.</p> <p>Barriers of successful inclusion of AT in PwD lifes:</p> <ul style="list-style-type: none"> -unavailable accessible technology for students & families (limited financial resources) -high cost of AT -professionals' lack of knowledge -devices abandonment (because of 	<p>Mostly served: people with intellectual/cognitive disabilities</p> <p>Least served: VI (might be related to high AT cost)</p> <p>Skills addressed: mostly academic or transition skills / less than functional & communication skills</p> <p>Setting: mostly general education settings & school settings</p> <p>Individual assessment: lack of ind. ass. – not effective match of AT with needs</p> <p>Family involvement & ongoing support: only in a</p>	<p>http://wordpress.ed.pacificu.edu/educ551/files/2011/08/Computer-Adapted-CBI_JSETv21n2.pdf#page=48</p>

		<p>lack of consideration of person's needs, type of AT selected, design factors, funding, unreliable AT, lack of tech support, negative attention by user</p> <p>Success only when goals and values are met, everybody collaborates, ongoing communication, immediate resolve of problems.</p> <p>This study reviewed articles/literature – summary of 60 articles with respect to :</p> <ul style="list-style-type: none"> -participant characteristics -focus of the study -study design -independent variables -training settings -individualized assessment for AT -other training materials -family involvement -ongoing support 	<p>few studies – lack of respect to their contribution</p> <p>Implications for practitioners:</p> <ul style="list-style-type: none"> -allow families to be involved -emphasize on skills maintenance & generalization across curriculum -use existing AT <p>Implications for researchers:</p> <ul style="list-style-type: none"> -explore AT in relation to variation of type & degree of disability -investigate effective teaching strategies -focus on collaborations & involve teachers in research - 	
<p>Messinger-Willman, J & Marino, M.T (2010). Universal Design for Learning and AT: Leadership considerations for promoting inclusive education in today's secondary schools. <i>NASSP Bulletin</i>, 94(1). 6-16</p>	<p>This article describes how the Universal Design for Learning theoretical framework can be used with assistive technology to enhance educational opportunities for secondary students with learning disabilities. Barriers that prevent secondary teachers</p>	<p>Increased numbers of students with disabilities in general education (secondary)-teachers need to facilitated learning and motivate students. However, they feel unprepared and search for ways for more effective teaching. Various challenges by STwD in secondary education:</p> <ul style="list-style-type: none"> -missing basic skills for reading, decoding, comprehension 	<p>Smith and Allsopp (2005) outline five major components of effective training that promote the transfer of newly acquired AT skills into classroom practice: (a) theory must be presented to provide a conceptual basis for the AT, (b) teachers must have the AT modeled, (c)</p>	<p>http://bul.sagepub.com/content/early/2010/06/11/0192636510371977.abstract</p>

	<p>from effectively selecting, adopting, implementing, and assessing assistive technology devices are discussed and potential solutions are identified. The article concludes with recommendations for enhancing secondary teachers' professional development opportunities.</p>	<p>-magnification of academic difficulties of elementary education in secondary education (eg lack of metacognitive skills) -lack of persistence- frustration and low motivation UDL: main principles are presented AT & UDL: complimentary nature – to promote access, participation and progress UDL-Acknowledge barriers and assess in order to remove barriers – flexible instruction AT-seeks solutions When combined, UDL and AT offer the potential to increase accessibility to a majority of students with and without disabilities Barriers to AT implementation: -inadequate knowledge of AT capabilities -lack of professional opportunities -inconsistent and inadequate support for educators -too much info included in professional development -situational barriers (lack funding, AT abilities and knowledge, lack of resources, time, consideration of needs) -institutional barriers (professional development, AT design, funding of devices) -Dispositional barriers (teachers'</p>	<p>multiple opportunities should be given to practice with the AT within the workshop setting under simulated conditions, (d) the training should provide structured feedback, and (e) teachers need ongoing training and sustained coaching and support. Secondary educators can use UDL and AT to enhance the academic, social, and behavior outcomes for students with disabilities if implementation barriers can be overcome. This can only be accomplished when teachers have the knowledge and skills to successfully integrate AT into their existing educational practices. However, there is a need for future empirical research that specifically identifies (a) additional professional development models that incorporate AT, instructional technology, and UDL; and (b) outcome measures and assessment instruments</p>	
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		<p>reluctance, attitudes towards AT, negative students attention to AT) (Cross, 1981).</p> <p>Overcoming barriers:</p> <ul style="list-style-type: none"> -Selection, acquisition, implementation and integration (Edyburn’s 2000 4 steps for AT inclusion in IEP) -Training programmes to prepare secondary education teachers -Site based workshops -Build on teachers’ current needs, strenghts & interests 	<p>for measuring the effectiveness of professional development across these areas.</p>	
<p>Emiliani, P.L. (2006). Assistive Technology (AT) versus Mainstream Technology (MST): The research perspective. <i>Technology and Disability, 18</i>, 19–29</p>	<p>The emergence of the Information Society is creating a complex intelligent environment where all citizens have to live. Even if the final technological embodiment of this new environment has not been completely determined, the general lines of development that are at present being discussed suggest that the normal approach to the problems of integration of people with disabilities, based on the adaptation of already developed technology, is no longer tenable. Therefore, on the one hand, it is necessary to</p>	<p>This paper deals with how the concept of designing for all potential users can be generalised outside the original field of architecture, to become applicable and relevant to the information society, i.e. from physical spaces to conceptual spaces.</p> <p>The design-for-all approach is not “against” assistive technology, the conceptual and technological environment in which adaptations and add-ons for people with disabilities have been traditionally developed.</p> <p><i>The traditional approach:</i> Computer technology had to be made available for PwD, hence specific adaptations where necessary – increased interest in accessibility by PwD=increased established services</p>	<p>The new emerging intelligent environment, which incorporates functions of communications, access to information and environmental control, requires a renewed in-depth study of the way in which information is collected, stored and distributed, and how people interact with information systems.</p> <p>Proactive strategies: design for all. However: When guidelines for constructing accessibility for all are available, the problems become essentially economic and political.</p>	<p>http://iospress.metapress.com/content/ad6y79bt60pvhbj2/</p>

	<p>redefine the integration problems of people with disabilities on the basis of the foreseen characteristics of the emerging environment; on the other hand, a procedure needs to be defined whereby new technology is produced so as to be accessible without adaptations. The corresponding concepts are discussed in the paper, followed by a summary of activities already carried out to substantiate the presented conclusions.</p>	<p><i>The emerging situation:</i> Information society – need to bridge the digital divide. Emergence of new environments of communication, learning, information etc. No clear distinction between these levels of life. Complex analysis of the possible impact of these emerging environments on PwD. Hence: It is therefore time to stop redeveloping new generations of assistive devices that refer to the situation as it appears today, and to start thinking about the future and developing innovative and proactive approaches to the integration of disabled people into society (p.22)</p>	<p>Available knowledge:</p> <ul style="list-style-type: none"> -to promote the development of environments of use, i.e. integrated systems sharable by communities of users that allow for richer communications, and the progressive integration of the computing and telecommunications environments with the physical environment -need for supporting communities of users, with emphasis on social interaction in virtual spaces, to enhance the currently prevailing interaction paradigms -integration of users in the design process and the evaluation of results -support actions as articulating demand for design for all, supporting the industry, as well as promoting awareness, knowledge dissemination and technology transfer. 	
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<p>Foley, A. & Ferri, B.A. (2012). Technology for people, not disabilities: ensuring access and inclusion. <i>Journal of Research in Special Educational Needs</i>, 12(4), 192-200.</p>	<p>The potential of technology to connect people and provide access to education, commerce, employment and entertainment has never been greater or more rapidly changing. Communication technologies and new media promise to 'revolutionize our lives' by breaking down barriers and expanding access for disabled people. Yet, it is also true that technology can create unexpected and undercritiqued forms of social exclusion for disabled people. In addition to exploring some of the ways that even (or especially) assistive technology can result in new forms of social exclusion, the paper proposes alternative ways of thinking about inclusive and accessible (as opposed to assistive) technology and provide some very practical ways that accessible technologies would promote greater access</p>	<p>The technology divide is less about access to technology and more about the deeper underlying meanings of 'access'. In other words, access is more than a bifurcation between 'haves' and 'have-nots'. It is impossible to separate technology from the larger social context. Instead of eliminating disability, technology often creates 'new dimensions of disability'</p> <p>Social meanings of (assistive) technology</p> <ul style="list-style-type: none"> - Medical model – conceptualization of “care” – biomedical/functional needs – normalization - Yet, although virtual worlds offer much potential for disability-based consciousness raising and politicisation (Ellis and Kent, 2011), they also pose navigational and accessibility challenges to many users with disabilities. <p>Technology as a cultural practice</p> <ul style="list-style-type: none"> - Political, social and ideological understandings of technology use that shape a device's design (mainstream device) may be a cause of inaccessibility - how individuals with disabilities are constructed and reproduced based on taken for-granted assumptions about ability and disability 	<p>Rather than designing technology around impairment or relying on a retrofit model, the paper argues that people's relationship to technology must be understood in a larger social, historical and cultural context. Moving beyond merely accommodating disabled people, accessible and inclusive technology would encompass a range of social and technical approaches to technology.</p> <p>Practices:</p> <ul style="list-style-type: none"> - accessibility from start - technology build on social context - re-imagine technology without qualifiers (e.g. assistive, accessible, inclusive etc) 	<p>http://onlinelibrary.wiley.com/doi/10.1111/j.1471-3802.2011.01230.x/abstract</p>
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	<p>and flexibility for disabled students and adults.</p>	<p>From assistive to accessible technology</p> <ul style="list-style-type: none"> - many of the so-called accommodations that make the web more accessible for disabled users enhance its use for all users - involvement of users in UD of technology - disability is still very much tied to charity and medical model discourses, even within electronic spaces. Websites focusing on managing, treating, rehabilitating, remediating or preventing disability predominate despite a burgeoning awareness of disability culture and disability studies scholarship 		
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