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*Literacy for Life*

# Literacy and persons with developmental disabilities: why and how?

Karen Erickson
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# Literacy and Persons with Developmental Disabilities: Why and How?
By Karen Erickson

***Why is the issue of disability so important when analyzing literacy?***
*Definitions of Disability*

During the last two decades, definitions of disabilities have moved from narrow, categorical definitions based upon a medical model as represented by the original 1980 version of the International Classification of Impairments, Disabilities, and Handicaps (ICIDH) to more socially and contextually based definitions as represented by the newer International Classification of Functioning, Disability and Health (ICF) endorsed by the Fifty-Fourth World Health Assembly in 2001 (WHA54.21). This shift reflects a change in perspective from purely medically-based, individual-centric definitions to definitions that take into account the broader context within which disabilities occur and distinguish between impairments which represent an individual's functional limitations and disability as the absence of or limitations in opportunities resulting from society and environment (Turmusani, 2003). Although the shift from ICIDH to ICF represents a positive change, there continues to be room for more change to a more socially situated definition as we attempt to understand disability around the globe.

The Organization for Economic Cooperation and Development (OECD) has an interest in developing specific means of conducting cross-national comparisons of the prevalence and treatment of disability and other health concerns (Hendershot, 2001). As such, the OECD has established three cross-national categories of disability. These are: (1) disabilities for which there is substantive normative agreement (e.g., blindness, deafness, and severe intellectual impairment); (2) disabilities that are manifested as difficulties learning; and (3) disabilities that are the result of socio-economic, cultural, and linguistic disadvantages. While it is helpful to have these categories, it is dangerous in some ways to work from such a broad framework, particularly when considering the needs of children who experience the most significant forms of disabilities across any of the three categories. The danger lies in the fact that countries and local entities can report that they are addressing the needs of each of these categories while only skimming the surface of the need within each. Without careful attention to the range of individual needs represented by each category, the use of any set of categories can serve to exclude the most needy.

The groups of children addressed in this report are those who are often described as invisible, forgotten, or excluded in national and international survey efforts (Ainscow & Haile-Giorgis, 1998). The children addressed herein experience intellectual impairments that influence their ability to learn. These children often experience concomitant physical, sensory, and communication impairments that influence their ability to interact with others. The individual functioning of these children is further influenced by the lack of supports and opportunities provided by their sociocultural surroundings. The groups of children addressed in this report are often excluded from general education environments as well as special education environments because the nature of their disabilities are so severe as to lead others to believe they are uneducable (Ainscow & Haile-Giorgis, 1998). These are children who might be found in any of the

three OECD categories, but are most often included in the first (disabilities for which there is substantive normative agreement) because their severe intellectual impairments are viewed as their defining feature. Whichever category, the group of children addressed in this report are the most needy.

*The importance of literacy for persons with disabilities.*

It is clear that there is a strong positive correlation between development and literacy (Silue, 2000). Given this, it follows that the mark of a highly developed country is the literacy rates of its citizens with disabilities. The difficulties persons with disabilities encounter in learning to read and write are numerous, yet they are often overlooked as worldwide efforts to resolve literacy for the general population are undertaken. Insuring that worldwide efforts to insure education for all include individuals with disabilities is no easy task, but it isn't unusual to find that the most important tasks are also the most difficult.

Literacy is important across multiple life domains: particularly for persons with disabilities. Literacy impacts upon communication and social domains. Persons with disabilities who are literate are more successful in their face-to-face communication with others (Koppenhaver, Coleman, Kalman, & Yoder, 1991), and are more readily accepted by their peers without disabilities (Donahue & Prescott, 1988). Increased levels of literacy bring with them increased perceptions of competence from others (Erickson, Koppenhaver, & Yoder, 1994).

Literacy impacts upon health. The relationship between health and literacy is bi-directional. At the earliest ages, health plays a significant role in determining whether or not a child will eventually be able to benefit from formal education that will lead to literacy (Greaney, 1996). As persons age, increased literacy levels are correlated with improved health outcomes (American Medical Association, 1999; Greaney, 1996; World Bank, 1993). In contrast, low levels of literacy are associated with negative influences on an individual's health status. Low levels of literacy can lead to substandard medical care by decreasing an individual's ability to function effectively and communicate effectively with physicians and other care providers (American Medical Association, 1999; Parker, et al., 1995). Low levels of literacy are also correlated with difficulties comprehending written or spoken medical advice, adverse health outcomes, and generally negative effects on health (Schillinger, et al., 2003; Gazmararian, et a., 1999).

Low levels of literacy negatively impact upon employment. Adults with disabilities who are literate have a wider range of vocational options than their peers who are illiterate (Richardson, Koller, Katz, 1988). The National Adult Literacy Survey conducted in the United States (1992) provides comprehensive evidence of this impact of literacy on employment. Even when factors such as education, race, marital status, age, health status, and region of the country are controlled for, those with low literacy levels did not achieve as well as those with adequate literacy levels in the labor market (Lerman & Schmidt, 1999). This finding was confirmed on a smaller scale in Zimbabwe where students with disabilities who attended special schools and engaged in a locally-developed special curriculum, found it much more difficult than their peers to gain employment (Peresuh & Barcham, 1998).

*Special considerations for disability in literacy*

For fifteen years, the Center for Literacy & Disability Studies (CLDS) has focused exclusively on literacy assessment, instruction, and use for persons with developmental disabilities. The work has been rooted in the contention that the cognitive processes of reading and writing are consistent regardless of an individual's abilities and disabilities. However, the ways in which persons with disabilities access print, engage in writing, and otherwise demonstrate their skills and understandings vary depending upon their nature of their abilities and disabilities. This view varies greatly from the medical model that has dominated the education and treatment of persons with disabilities in developed countries for decades. The medical model aims to cure the disability or help the individual reach optimal functioning (Reiter, 2000). In contrast, in the educational view held by the CLDS, education and intervention are a means of enhancing overall quality of life through improved interpersonal relationships, autonomy, and self-determination (Reiter & Asgad, 1992).

Motivation is an important consideration for all learners, but presents particular challenges for persons with disabilities who more often than not live in the face of low expectations, perceptions of incompetence, and a lack of access to experiences that build confidence. Motivation to learn is dependent upon many factors including: the success a learner anticipates as a result of engaging in a learning task and the individual's perception of the value of completing the task (Feather, 1982). The first of these two factors requires the learner to have enough self-confidence to believe it is possible to be successful. It is possible that the life experiences of learners with disabilities in all countries, particularly those where it is believed that disability is a burden to be assumed privately by the family, have been so restricted that they don't have the requisite self-confidence to be motivated to learn. Furthermore, very early literacy learning does not always yield immediate rewards. It takes time for skills to develop before learners can read and write personally meaningful and relevant materials (Erickson, Koppenhaver, & Yoder, 2002). Motivation is clearly an important literacy issue to consider, and reason to look specifically at disability when considering literacy.

Expectations and perceptions are another special consideration for literacy and persons with disabilities. Research suggests that teachers' expectations affect the way they behave and, in turn, their behavior influences how well students learn (Good & Brophy, 2000). Without systematic consideration of disabilities as worldwide efforts to insure education and literacy for all are continued, a context for failure will be created. Without direct attention to disability and careful attention to the ways that persons with disabilities can and do learn to read and write, the possibility remains open that teachers will expect that the individuals with disabilities they encounter will not experience literacy learning success. Without specific examples individuals with significant disabilities becoming literate and research to support specific practices to promote this success, perceptions that there are some individuals who experience disabilities so severe that literacy does not apply to them will go untouched.

There are multiple reasons to give special consideration to disability when considering literacy. Notice that none of the reasons offered here reflect a belief that disabilities considerations are located within the persons with disabilities. Certainly disability influences literacy learning and use for some individuals; however, the nature

of those disabilities do not dramatically change the cognitive processes involved in reading – once the individual can read and write.  Brain scans of children and adults with reading-related disabilities confirm that there are differences in the way they engage in reading-related tasks in alphabetic scripts (see e.g., Brunswick et al., 1999; Demonet et al., 1992; Paulesu et al., 1996; Pugh et al., 2000; Shaywitz et al., 1998) and non-alphabetic scripts (Siok et al., 2004) which may lead some to discount the believe of the CLDS that the internal, cognitive processes of reading do not vary as a result of disability.  It is true that these differences exist, but it is also true that post-intervention brain scans suggest that intervention that successfully promotes improved reading also results in brain scans that more closely resemble those of persons without reading-related disabilities (see e.g., Aylward et al., 2003; Eden et al., 2004; Richards et al., 2000; Shaywitz et al., 2004; Simos et al., 2002).  In other words, there are differences in the way that persons with some disabilities engage in reading before they have received effective instruction, but those differences disappear after the person has achieved literacy learning success. Successful reading is successful reading no matter what a person's abilities or disabilities might be.

### Defining and Measuring Literacy

#### Literacy as Communication

Literacy can be defined broadly to include all forms of communication whether conveyed through reading, writing, visual media, speaking, listening or alternative forms of communication such as sign language.  Often this broad definition is invoked when literacy learning for persons with significant disabilities as described in this report is discussed.  While this definition honors all forms of literacy, it often serves to exclude persons with significant disabilities from opportunities to learn written forms of literacy.  This broad definition of literacy has been central to the work of the CLDS, but has been carefully applied such that learning potential is enhanced rather than limited.  When the term literacy is used throughout this report, it is used with specific reference to written forms of communication including reading and writing.

#### Measuring Literacy

There is very little cross-national information available regarding literacy achievement, particularly for students with disabilities. While there is some evidence that countries that have their own system of assessment include students with disabilities in those assessments, there are few references to accommodations for students with disabilities or access to assessments for students with the most significant disabilities (Ainscow & Haile-Giorgis, 1998; Masurek & Winzer, 1994).  In the United States, legislation has been enacted to insure that a greater proportion of children with disabilities participate in state-wide testing programs, but estimates from nation-wide assessments suggests that only half of the students who receive special education services participated in the National Assessment of Educational Progress (NAEP) and fewer than that participate in state-wide testing (Elliot, Shin, Thorlow, & Ysseldyke, 1995).

The CLDS has been working for a decade to create a reliable and valid means of assessing literacy for students with the most significant disabilities.   Instead of approaching assessment from an accommodations perspective, the CLDS has built a universally accessible assessment from the ground up. The individual components of the assessment tool are currently being investigated with children with and without disabilities to build the case for their psychometric integrity. The final tool will require only a pointing response and assess word identification and comprehension.

### How can literacy for persons with disabilities be achieved?

*Formal and Nonformal Education*
Education is not limited to formal school, but learning to read and write is typically associated with formal school (Silue, 2000). Research in developed countries provides substantial evidence that the informal education that occurs in the homes of young children has a significant impact on later literacy learning (see e.g., Clay, 1991; Taylor & Dorsey-Gaines, 1988; Teale & Sulzby, 1992).  However, most persons become literate after they have begun formal education.
In North America, the importance of informal educational opportunities before school begins has been confirmed for students with a range of abilities and disabilities, but the vast majority of studies involving literacy achievement for persons with disabilities have focused on formal educational experiences in schools and clinics.  These studies demonstrate that literacy is a reasonable goal for students with a broad range of disabilities, including those with significant cognitive impairments (see e.g., Basil & Reyes, 2003; Blischak, 1995; Erickson, Koppenhaver, Yoder & Nance, 1997; Gipe, Duffy, & Richards, 1993; Van Kraayenoord, 2001).

*Research Trends in Literacy for Persons with Disabilities*
The vast majority of research conducted with persons with cognitive impairments has focused on their ability to learn to read single words in a variety of contexts and under a variety of conditions (for a complete review see e.g., Browder & Xin, 1998; Erickson, Koppenhaver, & Yoder, 1994; Katims, 2000). For example, in a series of experimental and quasi-experimental studies, students with moderate cognitive impairments demonstrated the ability to: (1) learn words and perform an action associated with each word (Brown & Perlmutter, 1971); (2) read words presented with a picture that was faded over time (Dorry, 1976; Dorry & Zeaman, 1973, 1975); and (3) read words paired with sign language (Sensenig, Mazeika, & Topf, 1989). Across these studies and others (e.g., Barudin & Hourcade, 1990), students with significant cognitive impairments learned to read more words under the instruction-condition than non-instruction conditions.
The trend to emphasize word level literacy in research extends beyond students with cognitive impairments to students with communication and physical impairments. In Europe, Australia, and North America literacy research with this population has been dominated by investigations of description of word reading and phonological/phonemic awareness abilities (e.g., Bishop & Robson, 1989; Dahlgren Sandberg & Hjelmquist, 1996, 1997; Foley & Pollatsek, 1999; Sandberg, 2001; Smith, 2001; Vanvelden & Siegel, 1999).   Only one published study has described an effective intervention to promote the

development of these skills in children with severe communication and physical impairments (Gillon, Clendon, Cupples, Flynn, Iacono, Schmidtkie, Yoder, & Young, 2003).

Reading is, however, much more than the ability to read individual words. Almost without exception, reading in any language requires that the symbols that represent words are translated into their oral language equivalent, that the individual meanings are understood, and that the words are understood with respect to one another when strung together in a text. The following sections provide more detailed information regarding specific literacy intervention strategies for different populations of individuals with disabilities.

*Word Identification Instruction*

When the goal is to teach children to identify words in isolation without systematically applying any phonics or decoding strategies, there are a number of strategies that have proven to be effective. For example, research suggests that students with cognitive impairments will learn to identify words more quickly when they are presented alone, in their written form, without the co-presentation of a picture (Didden, Prinsen, Sigafoos, 2000; Singh & Solman, 1990; Solman & Singh, 1992) or embedding the word in a picture (Pufpaff, Blischak, Lloyd, 2000). The use of pictures in word identification instruction has a long history. The issue isn't that pairing pictures with words doesn't work. It does work. It simply is not efficient. For example, in a training program for adolescents with the label of autism who also experience significant communication impairments, 1,471 trials were required for the students to reach 90% accuracy in the identification of three printed words that were associated with three types of candy (LaVigna, 1977). It required a total of three months of instruction using primary reinforcers (candy) and one-on-one instruction to teach just three words. Six years earlier, Brown and Perlmutter (1971) employed positive reinforcement to teach adolescents with moderate cognitive impairments to label and respond to nine different words after 60 hours of instruction. The seven adolescent subjects were able to do what the each word indicated in response to the presentation of the printed word, but the investment of time was similarly intense.

More recently there is evidence that there are more efficient strategies to teach word identification to persons with cognitive impairments. One effective strategy involves pairing words with sign language (Sensenig, Mazeika, & Topf, 1989). Fifteen adolescents with cognitive impairments learned to read new words when the word was presented on a flashcard, the sign was demonstrated, and the student repeated the word and the sign. This strategy proved to be more effective than learning words presented on the flashcard only with an oral repetition of the word. In another study comparing visual representation of the word only, picture fading, and tactile kinesthetic (trace letters in sand while saying the word) approaches to word instruction (Barudin & Hourcarde, 1990), there was no significant difference among the types of instruction. It was clear, however, that all three of the approaches investigated led to better word reading outcomes than did no intervention.

Recent efforts to teach word identification to students with cognitive impairments have included the use of computers and multimedia. In one study, adolescents with cognitive impairments used a multimedia computer program to learn to pair printed

words with their food referent and demonstrated generalization of their learning to the context of grocery shopping in their community (Mechling, & Gast, 2003). Another computer-based approach demonstrated that students with cognitive impairments could differentiate between vowels and consonants with a high degree of accuracy (Lane & Critchfield, 1998). Finally, use of a computer program that focused on teaching students to select whole words to construct sentences resulted in improved sentence construction, spelling, and word synthesis skills (Basil & Reyes, 2003).

Reading words can be accomplished through the whole word reading interventions described above. However, effective reading requires that a reader also have the ability to apply knowledge of grapheme-phoneme relationships to figure out unfamiliar words encountered when reading. Research indicates that students with moderate cognitive impairments can learn the letter-sound correspondence required to apply knowledge of grapheme-phoneme relationships when reading unfamiliar words. Specific letter-sound instructional strategies that have proven effective include the use of action mnemonics (e.g., a picture of a snake in the shape of an "s") and phoneme blending activities (Hoogeveen, Smeets, & van der Houven, 1987). The authors successfully taught seven Dutch adolescents with moderate cognitive impairments to emit the correct beginning phoneme for a word that matches a picture shown by the researcher. These findings are supported by a recently published report of a successful phonological awareness training program for children with Down syndrome (Kennedy & Flynn, 2003) which concluded that the children benefited from instruction that addressed alliteration, phoneme isolation, rhyme detection, and spelling phonetically regular words.

In the mid 1980's, two studies (Singh & Singh, 1985, 1988) demonstrated that word identification instruction that emphasized a sounding-out approach to word reading led to better long term effects on word identification while whole word approaches had better immediate effects. In a more recent study of a phonics instruction technique, word sorts were used to teach students with cognitive impairments and compare their performance with peers without disabilities who were struggling to learn to read (Joseph & McCachran, 2003). The word sort activity required students to categorize words into groups based on common sounds and spelling patterns. Both groups of students were successful in engaging in the instruction, but there were no significant posttest differences the groups and individual growth from pretest to posttest varied within both groups.

Word sorts were one component of a successful word identification instructional program implemented by the University College of Education in Winneba Ghana (Boison, 2003). While no specific information is provided regarding whether or not the subjects had identified disabilities, it is clear that the subjects were experiencing significant difficulties learning to read. In the intervention program described by Boison, children dictated personal stories to tutors who wrote down their words. The students then read and reread their stories before cutting apart the individual words and using them in word sort activities. As students learned the words, the tutors wrote storybooks that incorporated the new words, After three to five weeks of intervention the subjects had tripled the number of words they could read.

In a report detailing a successful reading intervention program for students with cognitive impairments in Zimbabwe (Mnkandla, 2003), a variety of research-based word identification instructional strategies were employed to successfully teach the students to

read. The instruction included: (1) picture reading as a means of teaching students symbolization and that print carries meaning; (2) simple reinforcement to teach letter identification and letter sound association; (3) printed word and picture matching; (4) word building and spelling. These word level instructional strategies were coupled with creative writing, comprehension instruction, and independent reading to help the students with cognitive impairments in their integrated school become readers and writers.

Other research regarding word identification instruction has focused on the context for instruction. One study suggests that students with severe cognitive impairments can learn to read words just as well in small groups as they do working individually with their teacher (Favell, Favell, & McGimsey, 1978), and can learn words incidentally when working in the small groups (Farmer, Gast, Wolery, & Winterling, 1991). Furthermore, when engaged in systematic instruction for part of the day, students with cognitive impairments suggests can learn new words through incidental learning (Fabry, Mayhew, & Hanson, 1984).

*Writing Instruction*

One published study has investigated the use of a writing instructional strategy that was pulled directly from the general education literature with a group of older children with the label of autism (Rousseau, Krantz, Poulson, Kitson, & McCallahan, 1996). Across an entire school year, the group of students (mean age = 12.8 years) participated in 40 minutes of writing instruction each day. The 40 minutes were divided between sentence combining exercises in which students literally combined two simple sentences into a single, more complex sentence. The other 20 minutes were devoted to writing in response to a prompt provided by the teacher. The students in the study increased the length of each though-unit in their writing by 1.49 words from pretest to posttest. In addition, their posttest writing samples were judged to be more sophisticated in terms of dispersion of vocabulary and the use of descriptive language.

Using a talking word processing program, three individuals with cerebral palsy wrote in response to picture prompts (Koke & Neilson, 1987). Results suggest that the use of the talking word processor provided speech feedback that increased the accuracy of student spelling and the likelihood that the students would engage in editing their errors. The computer also appeared to promote literacy learning for individuals who cerebral palsy who used symbols to generate text that was then transmitted to a communication partner on the other end of a telephone line (Gandell, 1991). The two subjects in this study engaged in this written communication for an average of 9 hours each week over the course of 10 months. The results include improved word identification and reading comprehension skills for both subjects.

A talking word processing program was employed along with other assistive technologies to support the narrative written language skills of a child with autism (Bedrosian, Lasker, Speidel, & Politsch, 2003). Using a single subject design, the authors demonstrated the intervention across an entire school year that focused on developing written narrative skills could benefit a student with autism and a same-age peer without disabilities. The subjects learned to use a speech-output communication device to ask one another questions during a planning and storymapping phase of their writing. The subjects took turns using the device to ask questions (e.g., What should the title be?) and using a computer to record their responses to the questions. Then they

worked together to complete the story, revise it, and make changes or additions as necessary.

*Comprehensive Literacy Instruction*

        In Zimbabwe (Mnkandla, 2003), children with cognitive impairments were successful in learning to read and write with a comprehensive instructional program that included regular opportunities to engage in word study, reading, and creative writing. Specifically, the children learned letter identification, sound-symbol relationships, word identification, word decoding, creative writing, reading comprehension, and independent reading. While no specific child outcomes are reported, this blend of instructional components is consistent with those found in reports of research on comprehension literacy instructional programs for students with disabilities in the United States.

        For example, in a published report of a yearlong intervention study, students with cognitive impairments engaged in a comprehensive literacy instruction made significant gains across multiple measures (Hedrick, et al., 1999). The program included word study, reading comprehension, independent reading, and writing. The nine students with cognitive impairments received three hours of literacy instruction each day with 45 minutes devoted to each of the four areas. After a full-year of instruction, the students demonstrated significant gains on both formal and informal measures of reading including better than 20 percentage points gained on the Test of Early Reading Ability – 2 (Reid, Hresko, & Hammill, 1989) and 18 percentage points on the Brigance Diagnostic Inventory of Basic Skills (Brigance, 1983).

        A number of single subject studies contribute more to our understanding of the importance of a comprehensive approach to literacy instruction for persons with disabilities (Al Otaiba & Hosp, 2004; Blischak, 1995; Erickson, et al., 1997; Gipe, et al., 1993). In a single subject case study (Erickson et al., 1997) one child with significant multiple disabilities including severe physical and communication impairments demonstrated significant improvements across reading, writing, and communication when engaged in systematic literacy instruction over the course of two school years. Similarly, an adult with similar disabilities engaged in a word study, comprehension, and writing instruction that yielded significant improvements in literacy and communication (Gipe, et al., 1993). At the end of two years of comprehensive literacy instruction, the subject demonstrated dramatic improvements in reading (4-7 years of improvement in independent reading skill) and listening comprehension (more than 12 years of improvement).

*Summary*

        There is a growing body of evidence from developed and developing countries to guide efforts to insure that all children, including those with disabilities, can learn to read and write. Clearly there is a need for a great deal more research to understand exactly which combination of instructional strategies, under which conditions, for which students will yield the greatest results, but there is enough existing evidence to provide everyone with a place to begin.

***What are the challenges to achieving it?***

Access to education presents the greatest global challenge to achieving effective literacy instruction for all persons with disabilities. Around the world there are an estimated 115 million children who do not attend school and 40 million of them are believed to have disabilities (World Bank, 2003). Given that 1 in 10 persons in most countries have physical, cognitive, or sensory impairments (UN Rapporteur on Human Rights), children with disabilities are grossly overrepresented in the population of children who are currently out of school.

Recent surveys suggest that the vast majority of nations have moved to a single administration or governance of education for all children, including those with disabilities (Ainscow & Haile-Giorgis, 2003). This documented shift supports the trend for most countries surveyed to provide access to general education for children with disabilities rather than meeting their needs in a separate setting or excluding them altogether (UNESCO, 1995). Unfortunately, there is very little evidence to suggest that there are systematic policies in place to govern or monitor the implementation of these inclusive or integrative educational policies. While there are clear and convincing arguments supporting integration from a human rights perspective (O'Hanlon, 1995; Pijl & Meijer, 1991; Richler, 2004; UNESCO, 1995), as well as evidence to suggest that children with disabilities have better outcomes when educated in inclusive settings (Richler, 2004), access to quality education in any form presents an ongoing barrier to achieving literacy learning success for children with disabilities in developed and developing counties alike.

In North America, it has been accepted for decades that students from disadvantaged backgrounds are at greatest risk for experiencing school failure (Coleman et al., 1996). There is now, however, a growing body of evidence to support the understanding that qualified teachers can have a positive effect on student achievement that outweighs the risks imposed by background (Gauthier, Dembele, Bissonnette, & Richard, 2004). Unfortunately, the adequacy of teacher training in developed as well as developing nations is questionable. In the United States of America, new teachers can begin teaching with as few as 1 course devoted to reading instruction (Hoffman & Roller, 2001). While some beginning teachers in the United States have as many as 6 or 8 courses in reading instructional methods, the least prepared teachers are much more likely to teach in high-poverty, low-performing schools than their highly-qualified peers (Education Week, 2003). As reported in Peresuh and Barcham (1998), teachers in Zimbabwe reported being fearful of working with special needs children in ordinary schools as they felt they were not sufficiently trained (Peresuh, 1991). The problem is intensified in developing countries where students are taught by teachers who often have had no preparation to teach children with disabilities (Mazurek & Winzer, 1994) or any preparation to teach reading whatsoever (Greaney, 1996; O'Sullivan, 2001, 2003). Given the limited training teachers have to meet the reading instructional needs of the children they teach without disabilities, it is not difficult to understand why it is challenging to teach children with disabilities.

The problem of inadequate teacher training is exacerbated by the fact that teaching reading is not an easy, unitary skill. In fact, the International Reading Association has a position statement that indicates, "…there is no single method or single combination of methods that can successfully teach all children to read. As a result, teachers must be familiar with a range of instructional and have strong knowledge of the

children in their classrooms in order to provide the most appropriate instruction for all learners (IRA, 1999)."

 Unfortunately, evidence suggests that curricula and teacher training favor content over pedagogy.  In fact, "reviews of national curricula and programmes at teacher training institutes suggest that national systems do not devote systematic attention to formulating ideal instructional methods; at best, they attempt to familiarize teachers with various options.  More often than not, they sidestep the issue in the belief that knowledge of the subject matter is more important than method: in other words, teachers are born, not made (p. 150, Cummings & Dall, 1995)."

 Class size and materials present additional challenges for those attempting to teach children with disabilities to read in developing countries.  While class sizes in developed countries typically average below 20 students per teacher, classes in developed countries have been recorded in excess of 60 (Abang, 1994; Anderson, 1996).  Even if these overcrowded classes are committed to teaching the children with disabilities in their communities, the additional demands of a child with disabilities seems impossible to manage.

**References:**
Abang, T.B.  (1994). Nigeria. In K. Mazurek & M.A. Winzer (Eds.), *Comparative studies in special education* (pp. 71-87). Washington, DC: Gallaudet University Press.

Ainscow, M.,  & Haile-Giorgis, M. (2998). *The education of children with special needs: Barriers and opportunities in central and eastern Europe.* Innocenti Occasional Papers, Economic and Social Policy Series, No. 67. Florence: UNICEF International Child Development Centre.

Al Otaiba, S., & Hosp, M.K. (2004).  Providing effective literacy instruction to students with Down syndrome. *Teaching Exceptional Children, 36* (4), 28-35.

Anderson, R. C. (1996). Research foundations to support wide reading. In V. Greaney (Eds.), *Promoting reading in developing countries* (pp. 55-77). Newark, DE: International Reading Association

Aylward, E.H., Richards, T.L., Berninger, V.W., Nagy, W.E., Field, K.M., Grimme, A.C., Richards, A.L., Thomson, J.B., and Cramer, S. C. (2003). Instructional treatment associated with changes in brain activation in children with dyslexia. *Neurology, 61*, 212-219.

Barudin, S. I.,  & Hourcade, J. J. (1990). Relative effectiveness of three methods of reading instruction in developing specific recall and transfer skills in learners with moderate and severe mental retardation. *Education and Training in Mental Retardation, 21*, 286-291.

Basil, C., & Reyes, S. (2003). Acquisition of literacy skills by children with severe disability. *Child Language Teaching and Therapy, 19*(1), 27-45.

Bedrosian, J., Lasker, J., Speidel, K., & Politsch, A. (2003). Enhancing the written narrative skills of an AAC student with autism: Evidence-based research issues. *Topics in Language Disorders, 23*(4), 305-324.

Bishop, D.V.M., & Robson, J. (1989). Unimpaired short-term memory and rhyme judgement in congenitally speechless individuals: Implications for the notion of

"articulatory coding." *The Quarterly Journal of Experimental Psychology, 41A*(1), 123-140.

Blischak, D.M. (1995). Thomas the Writer: Case Study of a Child with Severe Physical, Speech, and Visual Impairments. *Language, Speech, and Hearing Services in Schools, 26* (1), 11-20.

Boison, C. N. (2003). Development and uses of a 100 high-frequency sight word recognition list for children with reading failure. In A. E. Arua (Ed.), *Reading for all in Africa: Building Communities Where Literacy Thrives*. Newark, DE: International Reading Association.

Brigance, A. (1983). *Brigance diagnostic comprehensive inventory of basic skills.* North Billerica, MA: Curriculum Associates.

Browder, D.M., & Xin, Y.P. (1998). A meta-analysis and review of sight word research and its implications for teaching functional reading to individuals with moderate to severe disabilities. *The Journal of Special Education, 32,* 130-153.

Brown, L. & Perlmutter, L. (1971). Teaching functional reading to trainable level retarded students. *Education and Training of the Mentally Retarded, 6*, 74-84.

Brunswick, N., McCrory, E., Price, C.J., Frith, C.D., and Frith, U. (1999). Explicit and implicit processing of words and pseudowords by adult developmental dyslexics: A search for Wernicke's Wortschatz? *Brain, 122*, 1901-1917.

Clay, M. M. 1991. *Becoming literate: The construction of inner control.* Portsmouth, N.H.: Heinemann

Coleman, J.S., Campbell, E.Q., Hobson, C.J., McPartland, J., Mood, A.M., Weinfield, F.D., & York, R.L. (1996). *Equality of educational opportunity*. Washington, DC: US Office of Education.

Cummings, W.K., Dall, F.P. (1995). *Implementing quality primary education for countries in transition*. Amman, Jordan: United Nations Children's Fund.

Dahlgren Sandberg, A. & Hjelmquist, E. (1996). Phonological awareness and literacy abilities in nonspeaking preschool children with cerebral palsy. *Augmentative and Alternative Communication, 12*, 138-153.

Dahlgren Sandberg, A. & Hjelmquist, E. (1997). Language and literacy in nonvocal children with cerebral palsy. *Reading and Writing: An Interdisciplinary Journal, 9*, 107-133.

Demonet, J.F., Chollet, F., Ramsay, S., Cardebrat, D., Nespoulous, J.L., Wise, R., Rascol, A., and Frackowialk, R. (1992). The anatomy of phonological and semantic processing in normal subjects. *Brain, 115*, 1753-1768.

Didden, R., Prinsen, H., Sigafoos, J. (2000). The blocking effect of pictorial prompts on sight-word reading. *Journal of Applied Behavioral Analysis, 23*(3), 317-320.

Dorry, G. W. (1976). Attentional model for the effectiveness of fading in training reading vocabulary with retarded persons. *American Journal of Mental Deficiency, 81*, 271-279.

Dorry, G. W., & Zeaman, D. (1973). The use of a fading technique in paired associate teaching of a reading vocabulary with retardates. *Mental Retardation, 11*(6), 3-6.

Dorry, G. W., & Zeaman, D. (1975). Teaching a simple reading vocabulary to retarded children: Effectiveness of fading and non-fading procedures. *American Journal of Mental Deficiency, 79,* 711-716.

Eden, G. F., Jones, K. M., Cappell, K., Gareau, L., Wood, F. B., Zeffiro, T. A., Dietz, N. A. E., Agnew, J. A., & Flowers, D. L. (2004). Neural changes following remediation in adults developmental dyslexia. *Neuron, 44*, 411-422.

Education Week (2003). Quality counts 2003: If I can't learn form you …: Ensuring a highly qualified teacher for every classroom. Washington, DC: Education Week.

Elliot, J. L., Shin, H., Thurlow, M. L., & Ysseldyke, J. E. (1995). *A perspective on education and assessment in other nations: Where are students with disabilities?* Minneapolis, MN: National Center on Educational Outcomes.

Erickson, K.A., Koppenhaver, D.A., & Yoder, D.E. (2002). *Waves of words: Augmented communicators read and write.* Toronto, Canada: International Society for Augmentative and Alternative Communication.

Erickson, K.A., Koppenhaver, D.A., Yoder, D.E. & Nance, J. (1997). Integrated Communication and Literacy Instruction for a Child with Multiple Disabilities. *Focus on Autism and Other Developmental Disabilities, 12* (3), 142-150.

Erickson, K. A., Koppenhaver, D. A., & Yoder, D. E. (1994). *Literacy and adults with developmental disabilities*. Philadelphia: National Center on Adult Literacy.

Fabry, B. D., Mayhew, G. L., & Hanson, A. (1984). Incidental teaching of mentally retarded students within a token system. *American Journal of Mental Deficiency, 89*(1), 29-36.

Farmer, J. W., Jr., Gast, D. L., Wolery, M., & Winterling, V. (1991). Small group instruction for students with severe handicaps: A study of observational learning. *Education and Training in Mental Retardation, 26*(2), 190-201.

Favell, J. E., Favell, J. E., & McGimsey, J. F. (1978). Relative effectiveness and efficiency of group vs. individual training of severely retarded persons. *American Journal of Mental Deficiency, 83*, 104-109.

Feather, N. (Ed.). (1982). *Expectations and actions.* Hillsdale, NJ: Erlbaum.

Foley, B., & Pollatsek, A. (1999). Phonological processing and reading abilities in adolescents and adults with severe congenital speech impairments. *Augmentative and Alternative Communication, 15*, 156-173.

Gauthier, C., Dembele, M., Bossonnette, S., & Richard, M. (2004). *Quality of teaching and quality of education*: *A review of research findings.* UNESCO. Retrieved online February 5, 2005,

Gazmararian JA, Baker DW, Williams MV, et al. (1999). Health literacy among Medicare enrollees in a managed care organization. *JAMA*, 281(6):545-51

Gillon, G., Clendon, S., Cupples, L., Flynn, M., Iacono, T., Schmidtkie, T., Yoder, D., & Young, A. (2003). Phonological awareness development in children with physical, sensory, or intellectual impairment. In G. Gillon (Ed.). *Phonological awareness: From research to practice*. New York: Guilford.

Gipe, J., Duffy, C. A., & Richards, J. C. (1993). Helping a non-speaking adult male with cerebral palsy achieve literacy. *Journal of Reading, 36*(5), 380-389.

Good, T. L., & Brophy, J. E. (2000). *Looking into classrooms*. 8th ed. New York: Longman.

Greaney, V. (1996). Reading in developing countries: Problems and issues. In V. Greaney (Eds.), *Promoting reading in developing countries* (pp. 5-38). Newark, DE: International Reading Association.

Hedrick, W. B., Katims, D. S., & Carr, N. J. (1999).  Implementing a multimethod, multilevel literacy program for students with mental retardation. *Focus on Autism and Other Developmental Disabilities, 14*(4), 231-239.

Hoffman, J.V., & Roller, C.M. (2001). The IRA excellence in reading practices in reading teacher education at the undergraduate levels in the U.S.  In C. M. Roller (Eds.), Learning to teach reading: Setting the research agenda (pp. 32-79). Newark, DE: International Reading Association.

Hoogeveen, F. R., Smeets, P. M., & van der Houven, J. E. (1987).  Establishing letter-sound correspondences in children  as trainable mentally retarded.  *Education and Training in Mental Retardation, 22*, 77-84.

International Reading Association (1999). Using multiple methods of beginning reading instruction: A position statement of the International Reading Association. International Reading Association: Newark, DE.

Joseph, L. M., & McCachran, M. (2003). Comparison of a word study phonics technique between students with moderate to mild mental retardation and struggling readers without disabilities. *Education and Training in Developmental Disabilities, 38*(2), 192-199.

Katims, D. S. (2000). Literacy instruction for people with mental retardation: Historical highlights and contemporary analysis. *Education and Training in Mental Retardation and Developmental Disabilities, 35*, 3-15.

Kennedy, E.J., & Flynn, M.C. (2003). Training phonological awareness skills in children with Down syndrome. *Research in Developmental Disabilities, 24*(1), 44-57.

Kirsch, I. S., Jungeblut, A., Jenkins, L., & Kolstad, A.(1993). *Adult literacy in America:A first look at the results of the National Adult Literacy Survey.* Washington, DC: National Center for Education Statistics.

Koppenhaver, D. A., & Erickson, K. A. (2003). Natural emergent literacy supports for preschoolers with autism and severe communication impairments. *Topics in Language Disorders, 23*(4), 283-292.

Lane, S.D., & Critchfield, T. S. (1998). Classification of vowels and consonants by individuals with moderate mental retardation: Development of arbitrary relations via match-to-sample training with compound stimuli. *Journal of Applied Behavior Analysis, 31*, 21-41.

LaVigna, G. W.(1977). Communication training in mute, autistic adolescents using written word. *Journal of Autism and Childhood Schizophrenia, 7*, 135-149.

Lerman, R. I., & Schmidt, S. R. (1999). Functional literacy and labor market outcomes. Paper presented at the Urban Institute conference, "Helping Low-Wage Workers: Policies for the Future," US Department of Labor, Office of the Assistant Secretary for Policy, May 6-7, 1999. Retrieved online December 29, 2004. **http://www.dol.gov/asp/programs/history/herman/reports/futurework/conference/nalsfina/nalsfina.htm**.

Mazurek, K., & Winzer, M. A. (1994).  *Comparative studies in special education*. Washington, DC: Gallaudet University Press.

McConkey, R., Mariga, L., Braadland, N., & Mphole, P. (2000).  Parents as trainers about disability in low income countries.  *International Journal of Disability, Development, and Education, 47*(3), 310-317.

Mechling, L. C., & Gast, D. L. (2003). Multi-media instruction to teach grocery word associations and store location: A study of generalization. *Education and Training in Mental Retardation and Developmental Disabilities, 38*(1), 62-76.

Mirenda, P. (2003). "He's not really a reader…" : Perspectives on supporting literacy development in individuals with autism. *Topics in Language Disorders, 23*(4), 271-282.

Mnkandla, M. (2003). Teaching reading in a special school for mentally retarded children in Zimbabwe. In A. E. Arua (Ed.), *Reading for all in Africa: Building Communities Where Literacy Thrives*. Newark, DE: International Reading Association.

National Reading Panel (1998). Report of the National Reading Panel: Teaching children to read. Retrieved August 26, 2004, from **http://www.nationalreadingpanel.org/** Publications/publications.htm

O'Hanlon, B. (1995). *Inclusive education in Europe*. London: Fulton.

O'Sullivan, M. (2001). The INSET strategies model: An effective INSET mode for unqualified and underqualified primary teachers in Namibia. *International Journal of Educational Development, 93*, 93-117.

O'Sullivan, M. (2003). The development of effective strategies to teach reading among unqualified primary teachers in a developing country context. *International Journal of Early Years Education, 11*(2), 129-140.

Parker RM, Baker DW, Williams MV, et al. The test of functional health literacy in adults: a new instrument for measuring patients' literacy skills. *J Gen Intern Med* 1995;10:537-41.

Paulesu, E., Frith, C., Snowling, M., Gallagher, A., Morton, J., Frackowiak, R.S., & Frith, C. (1996). Is developmental dyslexia a disconnection syndrome? Evidence from PET scanning. *Brain, 119*, 143-157.

Peresuh, M., & Barcham, L. (1998). Special education provision in Zimbabwe. *British Journal of Special Education, 25*(2), 75-80.

Pijl, S. J., & Meijer, C. J. W. (1991). Does integration count for much?: An analysis of the practices of education in eight countries. *European Journal of Special Needs Education, 3*(2), 63-73.

Pufpaff, L. A., Blischak, D. M., & Lloyd, L. L. (2000). Effects of modified orthography on the identification of printed words. *American Journal on Mental Retardation, 105*(1), 14-24.

Pugh, K.R., Mencl, W.E., Shaywitz, B.A., Shaywitz, S.E., Fulbright, R.K., Constable, R.T., Skudlarski, P., Marchione, K.E., Jenner, A.R., Fletcher, J.M., Liberman, A.M., Shankweiler, D.P., Katz, L., Lacadie, C., & Gore, J.C. (2000). The angular gyrus in developmental dyslexia: task-specific differences in functional connectivity within posterior cortex. *Psychological Science*, *11*, 51-56.

Rand Corporation (2004). *Reading for understanding: Toward a r&d program in reading comprehension*. Retrieved 27 August, 2004, from http://www.rand.org/multi/ achievementforall/reading/readreport.html.

Reid, D.K., Hresko, W.P., & Hammill, D.D. (1989). *Test of early reading ability – 2.* Austin, TX: PRO-ED.

Reiter, S. (2000). Society and disability: A model of support in special education and rehabilitation. *Focus on Exceptional Children, 32*, 1-16.

Reiter, S., & Asgad, B. (1992).  Theoretical analysis and comparison of current attitudes in special education and rehabilitation: An outline of three models. *Issues in Special Education and Rehabilitation, 7*, 115-128.

Richards, T.L., Corina, D., Serafini, S., Steury, K., Echerlard, D.R., Dager, S.R., Marro, K., Abbott, R.D., Maravilla, K.R., and Berninger, V.W. (2000).  Effects of a phonologically driven treatment for dyslexia on lactate levels measures by proton MR spectroscopic imagining. *American Journal of Neuroradiology, 21,*  916-922.

Richler, D. (2004).  Quality education for persons with disabilities. *UNESCO 2005 Global Monitoring Report Commissioned Study*. Paris: UNESCO.

Rousseau, M., Krantz, P., Poulson, C., Kitson, M., & McClannahan, L.E. (1994).  Sentence combining as a technique for increasing adjective use by students with autism. *Research in Developmental Disabilities, 15*(1), 19-37.

Sandberg, A.D. (2001). Reading and spelling, phonological awareness, and working memory in children with severe speech impairments: A longitudinal study. *Augmentative and Alternative Communication, 17*, 11-26.

Schillinger D, Piette J, Grumbach K et al. (2003). Closing the loop: physician communication with diabetic patients who have low health literacy. *Archives of International Medicine*, *163*(1), 83-90.

Sensenig, L. D., Mazeika, E. J., & Topf, B. (1989). Sign language facilitation of reading with students classified as trainable mentally handicapped. *Education and Training in Mental Retardation, 24*(2), 121-125.

Shaywitz, B.A., Shaywitz, S.E., Blachman, B.A., Pugh, K.R., Fulbright, R.K., Skudlarski, P., Mencl, W.E., Constable, R.T., Holahan, J.M., Marchione, K.E. (2004). Development of left occipitotemporal systems for skilled reading in children after a phonologically-based intervention. *Biological Psychiatry, 55*, 926-933.

Shaywitz, S.E., Shaywitz, B.A., Rugh, K.R., Flubright, R.K., Constable, R.T., Mencl, W.E., Shankweiler, D.P., Liberman, A.M., Skudlarski, P., Fletcher, J.M., Katz, L., Marchione, K.E., Lacadie, C., Gatenby, C., & Gore, J. C. (1998).  Functional disruption in the organization of the brain for reading in dyslexia. *Proceedings of the National Academy of Sciences, 95*, 2636-2641.

Simos, P.G., Fletcher, J.M., Bergman, E., Breier, J.I., Foorman, B.R., Castillo, E.M., Davis, R.N., Fitzgerald, M., & Papanicolaou, A.C. (2002). Dyslexia-specific brain activation profile becomes normal following successful remedial training. *Neurology, 58*, 1203-1213.

Singh, N.N., & Solman, R.T. (1990). A stimulus control analysis of the picture-word problem in children who are mentally retarded: The blocking effect. *Journal of Applied Behavior Analysis, 23*, 525-532.

Siok, W.T., Perfetti, C.A., Jin, Z., & Tan, L.H. (2004). Biological abnormality of impaired reading is constrained by culture. *Nature*, *431,* 71-76.

Smith, M. M. (2001). Simply a speech impairment? Literacy challenges for individuals with severe congenital speech impairments. *International Journal of Disability, Development and Education, 48*(4), 331-353.

Snow, C.E., Burns, M.S., & Griffin, P. (1998). *Preventing reading difficulties in young children*: *Executive Summary*. Retrieved August 27, 2004, from **http://stills.nap.edu/html/prdyc/**.

Solman, R.T., & Singh, N.N. (1992). Pictures block the learning of sight words. *Educational Psychology, 12*, 143-154.

Taylor, D., & Dorsey-Gaines, C. (1988). *Growing up literate: Learning from inner city families.* Portsmouth, NH: Heinemann.

Teale, W. H., &  Sulzby. E.  (1986).

Teale, W. H., &  Sulzby. E.  (1992). Literacy acquisition in early childhood: The roles of access and mediation in storybook reading. In *The future of literacy in a changing world*. Edited by D.A. Wagner. New York: Pergamon.

Turmusani, M. (2003). *Disabled people and economic needs in the developing world: A political perspective from Jordan.* Hampshire, England: Ashgate.

UNESCO (1995). *Review of the present position of special education*. Paris: UNESCO.

Van Kraayenoord, C. (2001).  Literacy for all: Reading, writing, speaking, listening, viewing. *International Journal Disability, Development, and Education, 48*(4), 327-329.

World Bank (1993). *World development report*. Washington, DC: World Bank.

World Bank (1995). *Social indicators of development*. Washington, DC: World Bank.

World Bank (2003). *Education for all: Including children with disabilities*. Washington, DC: World Bank.

Yun, X. (1994). China. In K. Mazurek & M. Winzer (Eds.), *Comparative studies in special education* (pp. 163-178). Washington, DC: Galludet University Press.