

The use of a direct instruction reading program to tutor an adult with a moderate intellectual disability

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The paper was prompted by a question on a Discussion List: "Could any of the reading programs mentioned in this group be used for a 7 year old with Down Syndrome? My daughter has been stuck at the same level for a year and needs help to move on, but so far nothing has worked. She knows phonics, a few blends and about 50 whole words. She attends mainstream school and is taught using the same method as the other children but at her level. If anyone has any experience in this area I would be grateful for some advice".

The RMIT Psychology Clinic was established primarily to provide clinic experience for Masters and Doctoral students and also to provide a low cost psychology service to the community. It provides for child, adolescent and adult referrals, and about one third of those referred request educational assistance, most involving reading difficulties. Without the resources to provide the necessary teaching to these students, much of our work in these cases comprises assessment followed by educational programming - using proxy intervention agents, usually parents (though sometimes other family members, teachers, and tutors).

In the Clinic, students train the designated agent to use Direct Instruction programs. These programs do not require a knowledge of reading instruction for effective implementation as they are completely scripted. For the beginning reader, the Teach Your Child To Read In 100 Easy Lessons program (Engelmann, Haddox & Bruner, 1983) has been successfully employed for many years (Hempenstall, 2002). This program is written for parents and is based on the original teacher-directed program, Reading Mastery 1 and 2 (Engelmann & Bruner, 1984). In the Clinic, and at schools, training has been provided to parents, volunteers, and teachers to successfully implement this program in an individual or group format. Apart from initial training, the Clinic model involves monitoring of the presenters' skills, on-going support, and a variety of pre- and post-test evaluation strategies. The success of the program is heavily dependent upon treatment fidelity, thus the necessity of continued support. This overseeing role has an important secondary effect of enhancing the

willpower necessary to achieve success. Our experience has been that without this continued Clinic role, programs are often discontinued prematurely, or are altered to the extent that success is jeopardized.

The approach to training involves the following sequence: the clinician provides information about the program; the clinician demonstrates the program - with the parent/tutor initially acting as the student; role-reversal, in which the parent/tutor teaches the clinician (who provides feedback); the clinician teaches the student; finally the parent/tutor teaches the student (with clinician feedback). This process of demonstration-practice-feedback continues until the clinician is satisfied that the parent/tutor is able to correctly present the program. At least one complete session is devoted to this sequence; usually another session (one week later) is scheduled before the parent/tutor is asked to commence the 5 times per week program implementation at home. During this week the parent/tutor practises the various tasks in the first couple of lessons. The training of two parent/tutors is advantageous because it reduces the load on one, reduces the problems of student reluctance, and allows for supportive collaboration - all of which may enhance program endurance.

Follow-up sessions are (typically) weekly for the first two weeks, fading to fortnightly for two subsequent visits, then monthly until the program is completed. The amount of support parent/tutors require varies from case to case. Parent/tutors are asked to tape-record the first, 50th and 100th lesson, as such recordings can provide a more dramatic indication of progress than the standardized pre- and post-test results. Additionally, Mastery tests (adapted from the Reading Mastery series) can be given at 2 lesson intervals to detect any teaching/learning problems before errors become entrenched and progress stalls. At the end of the intervention post testing involves repeating the original test battery to note changes wrought by the program.

In this case, the referral arose from an adult literacy centre requesting assessment in order to determine whether a particular person with an intellectual disability (Alice) could be taught to read. Such a question reflects the low level of awareness of the potential of evidence-based practice to assist a wide range of learners. Indeed, little attempt is made to teach reading to intellectually disabled individuals in Australia (Van Kraayenoord, 1994).

In cases where efforts have been made to assist, interventions usually provide a simple list of survival words to be taught; however, these are taught as whole words (equivalent to pictures), rather than as ordered groupings of letters (Browder & Xin, 1998; Katims, 2000). Alternatively, attempts are to tailor whole language strategies to this population (Van Kraayenoord, 1994). In these settings, teaching phonic principles is not usually considered appropriate, and hence, no generative literacy skills are developed in the clients. Thus, even if the

individual learns to identify a limited number of taught words, there will be little or no generalisation to untaught words (Kay-Raining Bird, Cleave, & McConnell, 2000).

Alice wanted to learn in order to read magazines and newspapers, a task that requires mastery of the alphabetic principle - that letters and letter combinations map directly onto sounds. There is little research published on methods of teaching individuals with a moderate intellectual disability to read, but there are some encouraging signs. Also at RMIT University is an early intervention program called EPIC, which has used intensive direct instruction programs for children with Down syndrome from age 18 months (Clunies-Ross, 1988). It continues with such instruction until school commencement, and then provides transition follow-up. Unfortunately, for many of those children their excellent progress under the regimen of the Direct Instruction programs falters when they reach the rather less structured atmosphere of the typical Australian classroom.

One reason for the doubt about the feasibility of teaching reading at this level of disability is the underlying lack of vocabulary presumed to limit the understanding of that which may be correctly decoded. What is the point of correctly pronouncing words that one has never met before in spoken language? It should be noted however that the Alice's language skills approximated those of a kindergarten or first grade student - precisely the time at which reading instruction usually commences. Additionally, reading becomes for most students the vehicle for the majority of their vocabulary development; thus, it was anticipated that Alice's vocabulary would increase as a consequence of her reading.

Another issue involves the level of determination needed to maintain the effort over an anticipated long period of time to produce real and worthwhile gains. Fortunately, Alice was a strong willed person whose interest in learning to read was not a whim, but a deeply held desire. She was a relatively independent person - living with a similarly disabled friend, and having a full-time position in an electrical assembly plant to which she travelled alone each day.

Training of two tutors in the presentation of the program ensued, and monitoring was maintained over the 12 month period of the intervention. Two lessons from each tutor per week was the average rate of presentation of the program, less than the recommended 5 times per week. The tutors' presentation skills grew dramatically as assessed on a teacher behaviour scale (Bird, Fitzgerald & Fitzgerald, 1994) at regular intervals, and there were numerous hurdles to be overcome as the program progressed, some related to the terminology used in the program. For example, continuous blends (*mmaaannn*) rather than discontinuous blends (*mmm-aaa-nnn*) are important in promoting the correct pronunciation of a word from its blended parts. It was not until the tutors began to use the expression "slow and smooth" that the client understood what was required. A

communication booklet was used to keep each tutor in touch with what the other was doing, and was the vehicle allowing for supervisor/Masters student discussion and resolution of problems as they arose. Videotapes of lessons were monitored by the author at regular intervals and suggestions for overcoming obstacles were conveyed to the tutors via the Masters student.

Outcomes were pleasing if hard won. Initially, lessons required about six actual sessions to reach mastery (reducing to four as the program progressed). Both tutors expressed their delight and satisfaction at the progress made by Alice. Near the conclusion of the intervention, one interchange between the tutors was illuminating. "Alice is moving in leaps and bounds.... It's very exciting about her progress". "Yes, she's doing amazing things". Alice, too, was enthusiastic about her own sense of developing mastery over print, and often commented about the letters in street signs and advertising hoardings that she had formerly recognised iconically, but had not understood alphabetically. Unfortunately, after 31 completed lessons (131 sessions over almost 12 months), the program was discontinued when the client's partner became jealous of her progress, and refused to allow her further participation. As a consequence of this sudden action, neither further support nor formal post-testing was possible. Results, however, were evident to those who saw her improved reading behaviours. Alice knew the sounds of all 16 letters and 63 words taught to that stage. She was reading short decodable passages with appropriate comprehension, and had increased her store of letter sounds and words. She had not reached her objective of being able to read the newspaper but was picking out words that she knew, and attempting others of a decodable nature.

So, it appeared that the 100 Lessons program was a viable approach for Alice, a 40 year old woman with intellectual disability. Further research with the program is, of course, needed. However, there is already a significant theoretical rationale for the strategies within the 100 Lessons program. Some of this rationale is outlined below in the form of an annotated bibliography.

Can people with an intellectual disability learn to read?

“People can acquire transmitted skills like reading at any age, and can benefit from instruction at any age” (Greenough, 1997).

“The bottom line is that the role of mental age is not one of limiting what a child can learn but of limiting the ways in which they can be effectively taught” (Adams, 1990).

“Initially established with learners of more average abilities (for) learning basic skills, these (effective) teaching practices have also been shown to be strongly related to achievement of students with mild mental

retardation. ... A substantial amount of research evidence now supports the effectiveness of this approach for special education” (Scruggs & Mastropieri, 1993).

Is there research to support the direct instruction approach? For which students has it been found effective?

“The decade of the 1990s will witness, in classrooms serving students with mild mental retardation, the implementation of a group of instructional methods often referred to as *effective teaching practices* or *direct instruction*, if we heed the literature published in this area over the past 15 years” (Hendrickson & Frank, 1993, p.11).

“The research literature indicates that (direct instruction) facilitates the acquisition of reading skills. This kind of instruction has been very successful with regular students (Winograd & Hare, 1988). Similarly, it has been applied successfully in teaching students with mild disabilities (Frudden & Healy, 1987; Larrivee, 1989)” (Blanton & Blanton, 1994, p. 24).

“Principles underlying effective instruction may be more influential in the process of learning than the special characteristics of any particular student population” (O’Neill & Dunlap, 1984).

“We are beginning to realize that, for many children, direct instruction is required to help them understand how print maps to speech” (Blachman, 1991, p. 47).

“Direct instructional practices are 5 to 10 times more effective than the practices attempting to improve unobservable constructs, such as perception” (Kavale, 1990).

Summary of research findings on various reading interventions (Kavale, 1990).

Effect size: Strong > 0.5; Moderate 0.35 - 0.5; Weak < 0.35

	No. of studies	Av. effect size
Perceptual-motor training	180	0.08
Modality instruction	39	0.14
Direct instruction	25	0.84

How can a program developed for normal children be effective with adults with a disability?

“Effective reading programmes are not differentially effective - they are equally effective for all groups of children” (Goyen, 1992, p. 234).

“Phoneme segmentation ability was positively associated with early oral reading skill in a sample of intellectually disabled children, suggesting that these children learn to read in the same manner as normally developing children” (Cupples & Iacono, 2000).

“The critical variable is not age but stage. Whether child or adult, the path to facile reading appears to be similar. A number of studies involving adults with reading difficulties have revealed marked deficits in decoding” (Greenberg, Ehri, & Perin, 1997).

“There is no indication that taking a different approach based on age is warranted. Although the activities for improving decoding skills in older students will differ from those used with younger students, the skills that need to be learned remain the same” (Bruck, 1998).

Will it take forever?

A concern when initial progress is halting is whether it will always be infuriatingly slow, or is there a habit of learning that leads to an acceleration of future progress. There is some evidence cited below that: first, we should anticipate slow initial progress and not discontinue intervention prematurely; and second, that an acceleration will occur as the foundations for learning are laboriously laid down. In this case study the average number of trials to mastery did not reduce significantly (except at the very conclusion), but on the other hand, as the difficulty level of the reading tasks increased nor did the number of trials necessary for mastery increase. Perhaps the hoped-for acceleration would have occurred at a later stage of the intervention had it been possible to continue.

“If learners master beginning skills thoroughly they will learn subsequent skills faster, i.e., at an accelerated pace. Initial examples require more time and a greater number of trials to learn than later examples. The basic assumption is that children learn about learning and how-to-learn just as they learn other skills” (Engelmann, 1995, p. 177).

“To obtain automaticity in word recognition, some children require extremely high levels of over-learning and practice” (Felton & Wood, 1989, p. 4).

“One can expect extensive amounts of practice will be necessary for such students to obtain fluency with text” (Al Otaiba & Hosp, 2004).

Why choose a phonic approach over a meaning-based or survival-reading approach?

“Findings from the literature review revealed that individuals with mental retardation have the potential to benefit from phonic analysis strategies and/or instruction. . . . Phonics programs such as DISTAR were found to be effective in helping children with moderate mental retardation sound out words and blend sounds (Bracey, Maggs, & Morath, 1975; Gersten & Maggs, 1982)” (Joseph & Seery, 2004).

“Rather than relying solely on sight word reading, our program combines phonological awareness, phonics, sight-word fluency, games, vocabulary, and comprehension, plus progress monitoring, and appears to be an appropriate model for teaching reading to students with Down syndrome. All but one student made gains in decoding between 7 months to over 3 years in just 10 weeks” (Al Otaiba & Hosp, 2004).

“Using carefully directed instruction, individuals with intellectual disability can develop decoding, a crucial reading skill – one considered difficult for this population. Emphasising phonological reading skills will pay off if the instruction is sufficiently intense and appropriately targeted” (Connors, Rosenquist, Sligh, Atwell, & Kiser, 2006).

“Prompted by the No Child Left Behind Act, the U.S. Department of Education has given \$9 million in grants to Southern Methodist University, the University of North Carolina at Charlotte and Georgia State University to boost the reading scores of children with mental retardation. The expectation is that by learning to sound out and read words, and also to know what those words mean. Children with mental retardation will navigate more independently through life. “This research will break new ground in determining what levels of reading competence can be achieved by students who are moderately or mildly retarded,” says Patricia Mathes, SMU principal investigator and director of the Institute for Reading Research”. More information can be found at <http://www.smu.edu/smunews/education/reading-research.asp>”

“In the novice or poor reader, comprehension is limited primarily by difficulties in deciphering print” (Lyon & Moats, 1997).

“The low aptitude children learn the phonics they are taught, and do not pick it up as a by-product of more general reading” (Barr & Dreeben, 1983).

“It might be prudent to tell children directly about the alphabetic principle since it appears unwise to rely on their discovery of it themselves. The apparent relative success of programs that do that (Bradley & Bryant,

1983; Byrne & Fielding-Barnsley, 1991, 1993, 1995) support the wisdom of direct instruction” (Byrne, 1996, p. 424).

Share and Stanovich (1995) consider the alphabetic period as crucial, and Share developed a self-teaching hypothesis in which each successful decoding encounter with an unfamiliar word provides an opportunity to acquire the word specific orthographic information that is the foundation of skilled word recognition and spelling. The authors assert that effortless whole word reading can only develop through multiple examples of success in phonic decoding, and the instructional emphasis for older students must still be placed on ensuring letter-sound correspondences, blending and segmenting, and adequate practice. This implies that whole-word recognition strategies should not be over-emphasised in teaching programs, and the instructional emphasis even for older students must still be placed on ensuring letter-sound correspondences, blending and segmenting, and practice.

Recent experimental support for the self-teaching hypothesis has been strong (Cunningham, in press; Landi, Perfetti, Bolger, Dunlap, & Foorman, 2006; Levin, Shatil-Carmon, & Asif-Rave, 2006; Levy, Gong, Hessels, Evans, & Jared, 2006; Share, 2004). Further support for this position is provided by brain imaging studies (Shaywitz et al., 2004) that highlight the importance of the parieto-temporal region of the brain. This region when activated by practice in sounding-out promotes the development of the occipito-temporal region that provides the rapid whole word or orthographic reading characteristic of fluent readers.

While much work remains to be completed with this population, the most parsimonious position is to assume that the reading task should define the instructional content regardless of variation in learner characteristics.

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