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Literacy research: The Australian and international context.

There is a burgeoning agreement concerning the qualities that enable skilled reading, the conditions that hinder its development, the instructional features that support it, and how best to supply effective intervention to those students who falter. These features have been described in authoritative reports in the USA (National Reading Panel, 2000), Great Britain (Rose Report, 2006), and Australia (Department of Education, Science and Training, 2005). This paper will discuss the commonalities between these reports and consider how these elements have been incorporated in effective literacy programs.

Public interest in Australia surrounding the extent of literacy failure is at a high level currently, and is reflected in the federal government's decision to institute the current National Enquiry into the Teaching of Literacy (Nelson, 2004). The impetus may have arisen partly from the introduction of state and nationwide testing in recent years, and the findings reported in the media. There was sufficient resulting concern within the community and among some education stakeholders to produce political action at the federal level. Related to the Nelson Enquiry is another initiative, the National Accreditation of Pre-service Teacher Education. It will examine "evidence of the effectiveness of teacher education programs in preparing highly competent teachers" (National Institute for Quality Teaching and School Leadership, 2005, p.1). This overseeing body has been instituted because of concerns that current teacher training programs may not be preparing teachers sufficiently well to cope with the literacy demands of our society.

There Is a Problem

Community interest may be high at present; however, literacy and the role of schools in promoting it have had a fiery history in the educational community for almost two hundred years. Unfortunately, there has never been a consensus within the education community concerning the existence, definition, or extent of a literacy problem, and on appropriate methods of solving any such problem. This lack of unity has produced only fragmented intervention efforts, precluding the focussed approach necessary to effectively address the systemic dilemma of illiteracy. The broad scale assessment in recent years, whilst remaining controversial, has produced illiteracy incidence figures that make it difficult to remain comfortable with the view that our system needs no improvement. For example, some reports indicate that 30% of Australian students do not reach acceptable levels of literacy (Louden et al., 2000; Marks & Ainley, 1997). For disadvantaged children, that figure has been reported as high as 60% (Orr, 1994). In a study of 3000 Australian students (Harrison, 2002),

30% of 9-year-olds did not display adequate letter-sound correspondence - a basic phonic skill. A similar proportion of children entering high school continued to display confusion between names and sounds. More than 72% of children entering high school were unable to read phonetically regular three and four syllable words. In contrast, the official Australian figures reported in 2001 implicated about 19% of Year 3 children as failing to meet the national standards (Harrison, 2002). Even these official figures acknowledge a failure rate that threatens the welfare of the individuals involved and the nation as a whole. Some have suggested optimism about literacy instruction because of the results of the Program for International Student Assessment (OECD, 2003) study of 41 countries, including those in the OECD. In this survey, Australian students achieved a position fourth on the list for reading. However, the study assessed only 15 year old students, and was directed primarily at mathematical literacy. Additionally, it was a relativistic measure, and there was no indication of the actual attainment levels. For example, children were not penalised for errors of spelling and grammar. So, the figures vary concerning the absolute level of student reading attainment; however, there is general acceptance that improvement is desirable, particularly for disadvantaged students.

Similar troubling findings have galvanised action in both Great Britain (Department for Education and Employment, 1998, 2002) and the USA (National Reading Panel, 2000). A major continuing focus for discussion involves the significance of phonic strategies in beginning reading, and as an overarching theme, the role of educational research in influencing educational policy and practice. In both of these countries, federal policies, after exhaustive research analyses, have observed that phonics has been relegated to a minor role in beginning reading instruction. Further, their analyses have led to the conclusion that phonics should take a central role in beginning reading, and they have instituted national policies to ensure that this occurs. Additionally, knowledge about early identification and intervention (Torgesen, 1998) holds promise of reducing the unacceptably high proportion of students who do not achieve adequately in school because of under-developed literacy skills.

The Role of Education

Whatever figure is accepted, it is apparent that it is beyond acceptability. There was a time when it was thought that teachers could have little impact upon student success. The Coleman Report (Coleman et al., 1966) and other studies deflated many in the educational community when they asserted that what occurred in schools could have little impact on student achievement. It was argued that the effects on educational outcomes of genetic inheritance, early childhood experiences and subsequent family environment vastly outweighed school effects (Jencks et al., 1972). That being the case, there would be little point in stressing a particular approach to curriculum since the effects would be negligible compared to other variables outside a school's control.

In contrast to these perspectives, there is now a strong body of teacher effectiveness research, exemplified in the Sanders and Rivers (1996) finding that students in classes with effective teachers for 3 years in a row achieved 50% more learning than those in classes with poor teachers over the same period. Further, the strongest benefit accrued to lower achieving students as teacher effectiveness increased. These advantages applied across diverse ethnic groups, and were cumulative. Students with similar abilities and initial skill levels attained very different educational outcomes depending upon the various teachers into whose charge they were placed.

There are now many studies that should direct our attention towards classroom instructional processes as a major variable impinging on student achievement. Based upon his analysis of empirical findings available since the 1970's, Jencks has altered his earlier view, and now promotes the potential of education to significantly reduce inequality in student achievement (Jencks & Phillips, 1998). Wenglinsky (2003) reported a total standardized effect for teacher variables as 0.70, larger than the total standard effect of background measures (0.56). In the area of reading, the high incidence of failure is now thought to be reducible to around 5% when empirically supported approaches are adopted from the beginning phase of school (Alexander, Entwisle, & Olsen, 1997; Fuchs & Fuchs, 2005; Torgesen et al., 2001; Torgesen, Wagner, Rashotte, Alexander, & Conway, 1997; Vellutino et al., 1996).

It is also becoming clearer that the role of teachers in promoting reading development is undergoing a change of emphasis, although many teachers feel under-trained to manage the transition from a largely facilitating role to one of direct instructor (Carnine, 2000; Ingersoll, 1999; Moats, 1994). This pessimism is not unreasonable, given the incidence figures above, and the finding (Hill, 1995) that, in Victoria, the lowest 10% of students make no discernible reading progress between Year 4 and Year 10.

A national survey of 1000 teachers by Rohl and Greaves (2005) adds to this concern, reporting that 36% of beginning primary teachers felt unprepared to teach reading. Senior staff at their schools were even more pessimistic, considering that 49% of these beginning teachers were unprepared to teach reading. These figures rose dramatically (77% - 89%) when the beginning teachers were confronted with diverse learners (those with disabilities or learning difficulties, indigenous and low SES students, and students whose initial language was not English).

Research Can Provide Direction

So, there is a systemic problem, evidence that it is largely resolvable, and a first line of attack (the school system) that is inadequately prepared for its role. The crucial weakness in the system arises due to a lack of focus upon the vital aspects of beginning literacy instruction. Education has a long history of responding enthusiastically to gurus, fads, and philosophies whilst ignoring or decrying research-based methods and their findings (Hempenstall, 1997).

Times are changing, however. For example, in the USA there has a strong top-down initiative (Reading First) toward increased adoption of those literacy programs having evidence of effectiveness. This process of tying funding to instructional method has been resisted strenuously by many teachers, some of their organisations, and the teacher training facilities (Manzo, 2002), though compliance is on the increase. Recent evidence suggests the initiative is reaping rewards. For example, the National Center for Education Statistics (2005) reported that for nine-year-olds, the average reading score was higher in 2004 than in any previous assessment year since data was first obtained in 1971. Additionally, an Institute of Education Sciences (Stone, 2002) has been created in an attempt to increase the scientific rigour of the research that will inform future education policy decisions. Perhaps, the dreaded educational pendulum's swing will be attenuated as a consequence.

Perhaps the most definitive information to date regarding reading instruction was presented in the National Reading Panel report (National Reading Panel, 2000). For its review, the Panel selected methodologically sound research from the approximately 100,000 reading studies that had been published since 1966, and from another 15,000 earlier studies. The specific areas of reading instruction the Panel noted as crucial were phonemic awareness, phonics, fluency, vocabulary and comprehension. For children in pre-school and in their first year of formal schooling, the Panel found that early training in phonemic awareness skills, especially blending and segmenting, provided strong subsequent benefits to reading progress. It further recommended that conjoint phonemic awareness and phonics emphases should be taught directly, rather than incidentally, as effective instruction in both skills leads to strong early progress in reading and spelling. Since that time, important national reports from Great Britain (Rose, 2006) and Australia (Department of Education, Science and Training, 2005) have presented similar recommendations. In Great Britain, the government response to the research findings has been a mandated national curriculum. Australia is yet to have an official government response to its report.

What Can Be Gleaned From These Reports?

Stressing an important role for phonics is one common thread among the reports - but what sort of phonics? Systematic synthetic phonics instruction has been espoused as most effective for beginning students by these august panels recently (Department of Education, Science and Training, 2005; National Reading Panel, 2000; Rose, 2006; Snow, Burns, & Griffin, 1998) in addition to similar conclusions having been reached by many individual researchers (Baker, Kameenui, Simmons, & Stahl, 1994; Bateman, 1991; Blachman, 1991; Felton & Pepper, 1995; Foorman, 1995; Foorman, Francis, Beeler, Winikates, & Fletcher, 1997; Moats, 1994; Simmons, Gunn, Smith, & Kameenui, 1995; Singh, Deitz, & Singh, 1992; Spector, 1995; Tunmer & Hoover, 1993; Weir, 1990). This approach recognises the demands of mastering an alphabetically-

based writing system, and initially focuses upon teaching the sounds employed in words, their corresponding graphemes, and the processes of blending and segmenting.

The different approaches to teaching phonics vary in what is taught (analytic or synthetic phonics instruction), and how it is taught (systematic or incidental). In a synthetic (or explicit) program, students will learn the associations between the letters and their sounds. This may comprise showing students the graphemes and teaching them the sounds that correspond to them, as in “This letter you are looking at makes the sound *sss*”. Alternatively, some teachers prefer teaching students single sounds first, and then later introducing the visual cue (the grapheme) for the sound, as in “We’ve been practising the *mmm* sound, and here’s the letter used in writing that tells us to make that sound”. In a synthetic program, the processes of blending (“What word do these sounds make when we put them together *mmm-aaa-nnn*?”), and segmenting (“Sound-out this word for me”) are also taught. It is of little value knowing what are the building blocks of our language’s structure if one does not know how to put those blocks together appropriately to allow written communication, or to separate the blocks to enable decoding of a letter grouping. After letter-sound correspondence has been taught, phonograms (such as: *er, ir, ur, wor, ear, sh, ee, th*) are introduced, and more complex words can be introduced into reading activities. In conjunction with this approach "controlled vocabulary" stories may be used - books using only words decodable using the students' current knowledge base. The term “synthetic” is often used synonymously with “explicit” because it implies the synthesis (or building up) of phonic skills from their smallest unit (graphemes).

Analytic phonics is a different approach to teaching phonics. “Analytic” (or implicit) phonics signifies the analysis (breaking down) of the whole word to its parts (an analysis only necessary when a child cannot read it as a whole word). In analytic phonics, students are expected to absorb or induce the required information from the word’s structure, largely from presentation of similar sounding words. For example, “The first sound you are seeking also occurs in these words: *mad, muscle, moon*”. The words may be pointed to, or spoken by the teacher, but the sounds in isolation from words are never presented to children. A major problem with implicit phonics methods is the assumption that all students will already have the fairly sophisticated phonemic awareness skills needed to enable the comparison of sounds within the various words.

An additional problem with most implicit phonics approaches is that children are provided with a variety of books correlated with their interest rather than with their skill level. They are encouraged as a first strategy to use the pictures and context of the stories to predict words, rather than employing the words’ alphabetic makeup (Johnston & Watson, 2003). This approach known as the Three Cueing system has been criticised as inconsistent with what is known about skilled reading development (Hempenstall, 2003). The word recognition of skilled readers provides them with the text meaning even before contextual information can be accessed. So, the fluent reader recognises most words in a few tenths of a second (Stanovich, 1980), far

faster than complex syntactic and semantic analyses can be performed. It is prediction rather than scanning words that is too slow and error-filled to account for skilful reading.

The synthetic approach has been exciting much interest due to some very powerful and long-lasting effects reported from Clackmannanshire in Scotland (Johnston & Watson, 2003; Watson & Johnston, 1998). Three hundred Scottish school beginners were taught by either synthetic or analytic phonics programs over an intensive 16-week period at school commencement. Those who were taught by the synthetic phonics method were seven months above their chronological age and similarly advanced beyond their analytically taught peers. Seven years later the synthetic group's word-reading ability was three-and-a-half years advanced, and almost two years ahead in spelling, and disadvantaged children achieved similar progress. Unaccountably, the progress of boys exceeded that of girls (by 11 months), and only 5.6% of the students taught synthetic phonics were behind in word reading at the five-year follow-up.

There are also two approaches to the instructional process (as opposed to the instructional content), "systematic" and "incidental". In systematic instruction, there will be attention to the detail of the teaching process. Instruction will usually be teacher-directed, based on a logical analysis of the skills required and their optimal presentation sequence. At its most systematic, it will probably involve massed and spaced practice of those skills (often isolated from text), corrective feedback of errors, and continuous evaluation of progress. An alternative teaching approach, incidental (or discovery, or embedded) instruction shifts the responsibility for making use of phonic cues from the teacher to the student. It assumes that students will develop a self-sustaining, natural, unique reading style that integrates the use of contextual and graphophonic cues, without the need for systematic instruction.

According to the research consensus, there are compelling theoretical and empirical reasons why teaching phonics to students in this systematic synthetic manner produces greater success than do the less directive approaches popular over the past 20 years. A theoretical rationale indicates whether, given the state of knowledge at the time, it is reasonable for a model to be successful. An empirical rationale indicates whether a particular approach is indeed successful.

Though many of the major whole language advocates were disparaging of the role of phonics in learning to read (Goodman, 1974, 1985; Smith, 1973; Weaver, 1988), there has been an apparent renewed interest in the potential of phonics instruction to provide some assistance to beginning readers. The approach that maintains most of the whole language philosophy with a sprinkling of phonics is often described as a "balanced approach" (Moats, 2000). Whether teachers have been adequately trained to optimally balance such unusual bedfellows as whole language and phonics was addressed in the Rohl and Greaves (2005) nation-wide survey. About 57% of beginning teachers felt unprepared to teach phonics, and experienced teachers at their schools considered that 65% of them were unprepared for the task. Thus, there is clearly a need for an

examination of the quality of teacher training received in Australia today (National Accreditation of Pre-service Teacher Education, 2005).

Instruction That Hinders Progress

It is not simply that some methods have been shown to be less efficacious than others in promoting reading success. Some commonly implemented strategies are actively harmful. Students grasping for a means to make sense of the squiggles on a page may attempt to predict upcoming words by second-guessing the author. Some teachers are driven by the belief that students should rely primarily upon prediction strategies (Emmit, 1996; Weaver, 1988). They are less likely to be concerned about the non-alphabetic strategy in use, and more likely to suggest that the student attend to the picture that accompanies the text. This is generally an unhelpful suggestion as there is no word-level learning involved - the reading task is merely delayed or bypassed. They may also persuade their students to focus upon meaning cues rather than word-level cues, based upon a misplaced faith in miscue analysis and its underlying assumptions (Hempenstall, 1998). However, it is now recognised that errors that retain meaning, but not word structure, are not associated with efficient reading and, hence, not to be encouraged. Savage, Stuart, and Hill (2001) found, through reading-error analysis, that the more attention young readers paid to all the letters and their position in words at age 6, the more advanced they were in reading by age 8. Those young readers whose errors may have retained meaning, but not initial and final phonemes (for example, saying “people” for “crowd”), were not among those making good progress.

Some teachers remain unaware that the use of context as a strategy to recognize words is ineffective (Kamhi & Catts, 1999). Context, as a cue to word recognition, is of only minor benefit even with non-content words, enabling only 40% comprehension at best (Stanovich, 1990). In a study by Gough, Alford, and Holley-Wilcox (1981), well educated, skilled readers, given adequate time, could correctly ascertain from context only one word in four. As for content words, only 10% are recognizable from context (Gough & Wren, 1998). This figure is lower because content words carry a great deal of the meaning in a sentence, and are less likely to be defined within the surrounding text. Additionally, fluent readers’ have already decoded the words before the relatively slow process of prediction can take place (Macmillan, 2002).

Comprehension suffers further when reliance on context is promoted (Bruck, 1990), because significant working memory resources need be devoted to predicting and confirming words from context, thereby unnecessarily diverting the resources otherwise available for comprehension. Using context as a major strategy in recognising words should be discouraged. It is a characteristic of beginning and struggling readers, not of skilled readers (Alexander, 1998; Nicholson, 1991), and its use does not assist comprehension development. Indeed, a study by Shankweiler et al. (1999) noted that the ability to read aloud a list of English words is most strongly associated with understanding - accounting for 79% of the variance in reading comprehension.

Orthographic development

There are far too many words in our written language to be learned through direct teaching, and at some point it is necessary for students to realise their capacity to teach themselves the pronunciations of new words. The alphabetic period is crucial for the rise of self-teaching (Share, 1995), as students begin to appreciate that every time they decode an unfamiliar word it subsequently becomes easier and faster to do so. In fact, this practice enables them to become adept at storing letter-patterns – orthographic information that can dramatically hasten word recognition (Torgesen, 1998).

As they read the same words repeatedly, the spellings of the words become amalgamated or bonded to syntactic, semantic and phonological identities already stored in memory. When readers see words that they have learned in this way, they read them not by guessing or sounding out, but rather by accessing the amalgams in memory. ... sounding out strategies are used mainly to read unfamiliar words (Ehri, 1998, p.100).

This gradual “lexicalization” (Share & Stanovich, 1995, p. 18) occurs through repeated opportunities to use letter-sound correspondences for decoding. The original decoding strategy is used with less frequency as the range of familiar word patterns increases through this self-teaching mechanism. The phonological recoding strategy remains useful for decoding unfamiliar words - and our language has many low frequency words. Eighty percent of English words have a frequency of less than one in a million (Carroll, Davies, & Richman, 1971, cited in Share & Stanovich, 1995). Thus, the phonological recoding mechanism has a usefulness that survives beyond its initial ability to provide the opportunities for the formation of orthographic representations. Even in adults, this ability to decode unfamiliar words is a hallmark of skilled reading, and continues to be of significance. One example of its value occurs when individuals are faced with a new technical vocabulary related to their occupation or interests. Even bright well-compensated adults with dyslexia (whose primary difficulty is in decoding) find it distressing that they need to laboriously remember word shapes, constantly battle with new words, and have very little idea how to spell (Greenberg, Ehri, & Perin, 1997).

A crucial and often misunderstood requirement for skilled reading is that the sought-after orthographic strategies can only be developed through multiple examples of success in decoding phonologically (Ehri, 1998, Share & Stanovich, 1995). Thus, it does matter *how* children read.

Some research using brain imaging techniques (Joseph, Noble, & Eden, 2001; Pugh et al., 2002) has added to our understanding of this link. It appears that the left brain’s parieto-temporal region is employed in decoding (sounding out), and in good readers this area is very active during reading. In struggling readers there is little activity in the left hemisphere, but considerably more in the right hemisphere.

When beginning readers have decoded a word correctly a number of times, they develop a neural model that is an exact replica of the printed word, reflecting the word’s pronunciation, spelling, and meaning. This

internal representation is maintained in the occipito-temporal region of the left hemisphere. Subsequent recognition of that word becomes automatic, taking less than 150 milliseconds (less than a heartbeat). It is the key to fluent reading. However, the occipito-temporal region does not become available without building up the parieto-temporal region.

On average, from 4-14 accurate sounding-outs (Apel & Swank, 1999) will create the firm links necessary; although some children may require many times that number (Lyon, 2001; Swanson, 2001) to facilitate the growth of connections between those regions. Not all children have a strong phonological talent, and there may be both genetic and environmental influences on in these individual differences.

Those who continue to struggle to read do not use the same brain regions for reading. Instead, they create an alternate neural pathway, reading mostly with regions on the right side of the brain - areas not well suited for reading. However, all is not lost as the brain's plasticity enables it to respond to a remedial environment to establish the appropriate connections (Halfon, Schulman, & Hochstein, 2001). In a Shaywitz et al. (2004) intervention, it was revealed that the appropriate left hemisphere regions can be stimulated into activity through the use of systematic synthetic phonics instruction. Increased fluency, accuracy and comprehension were noted in the intervention group at post-test and at one year later. Additionally, the occipito-temporal region continued to develop 1 year after the intervention had ended.

So, it is the practice at sounding-out a word that gradually causes an imprint of that word (or word segment) in the memory, not the vague instruction to "remember this word - picture it". This imprint is not of a diffuse word shape - but of a letter sequence that becomes recognisable as quickly as would a letter or two when one is reading. The position of the letters is as firmly entrenched as are the actual letters themselves. It is why proofreading is possible for good alphabetic readers, why a misspelling stands out so clearly.

Fluency

The crawling-before-walking dictum can be bemusing to those who consider that beginners should be encouraged to read in the way that skilled readers do (Goodman, 1973, 1974). However, and analogous to many other life skills, to ensure that students develop instantaneous word recognition, teachers must first emphasise the minutiae of decoding, and ensure that all students obtain their requisite levels of practice to enable the achievement of that most important quality, automaticity. It is a state of skill development in which tasks that formerly required concentration to complete competently, having been practised to the point of over-learning, are now able to be completed without conscious attention (Baker, Kame'enui, Simmons, & Stahl, 1994; Thompson & Nicholson, 1998).

All readers have a limited amount of attentional capacity to devote to the reading task. If the basic process of extracting the words from the page is laboured (slow and usually error-prone), readers will lose track of that which already has been read (Mastropieri, Leinart, & Scruggs, 1999), and be unable to follow the

text's sequence of ideas (Kamhi & Catts, 1999). They will also remain essentially passive during the reading task, not able to bring their own experiences to bear on the all-important meaning-making process, and hence their comprehension is doubly hindered. Because of the additional effort required, they are likely to be reading less than their peers and their resultant slower vocabulary development further impedes comprehension (Mastropieri et al., 1999). Sometimes these struggling readers are exhorted to pay more attention to meaning (Newman, 1985) than to the words in front of them - a cruel, if unintentionally so, diversion away from the problem source. With automaticity, all available attention can be directed to the meaning-making task, because the lower-level decoding process is effortless. Unsurprisingly then, research has shown that fluency and comprehension are mutually interdependent (Mathes, Howard, Allen, & Fuchs, 1998).

Some students who have reached the stage of reading grade level materials with accuracy may continue to be characterized by a slow and halting style, read without expression, and despite their excellent word recognition accuracy, comprehension may be compromised. Hence, as reading accuracy becomes facile, the role of reading speed assumes greater importance. For some students, fluency (speed combined with accuracy) may develop simply from practice at reading, but can be enhanced when students' attention is drawn to the goal of increasing their reading speed. The greater the volume of appropriately constructed text read at a student's independent reading level (95% accuracy), the more rapidly fluency is likely to develop (Lyon, 1998). Students whose fluency does not develop normally may require significant additional support, a circumstance easily overlooked unless regular fluency checks are an element in the reading program.

Both standardized and informal assessments of oral reading accuracy, rate and comprehension are recommended and referenced in each of the reports discussed earlier, yet both fluency assessment and instruction are notably absent from the reading curricula of many schools. Perhaps this is unsurprising given that reading fluency is not mentioned in the English curriculum standards documents from at least three Australian states: Victoria, South Australia, and Queensland (Department of Education, Employment & Training, 2001).

Comprehension and Vocabulary

This is not the end of the story however – comprehension strategies assume greater significance as the texts students are required to read become increasingly demanding. Without the capacity for rapid context-free decoding, significant reading comprehension advances are unlikely to occur. When the orthographic stage has been achieved, students are at least able to employ in the reading task those oral language comprehension skills they have developed thus far (Crowley, Shrager, & Siegler, 1997). In the earlier stages, their oral comprehension far exceeded their reading comprehension because of the decoding constraints. Their comprehension skills will have continued to develop if teachers have incorporated plenty of oral language activities into their program.

Of course, as the volume and complexity of reading increases so, one expects, does the sophistication of their reading comprehension strategies. This process is not guaranteed, however. For some students with earlier decoding problems, reduced exposure to text has hampered overall reading progress, leaving lingering hurdles, such as vocabulary gaps or even chasms (Nagy, 1998). Whereas, good readers continuously increase their vocabulary and understanding of the world through their reading (Nagy & Anderson, 1984; Osborn & Armbruster, 2001), struggling students may read as little as one hundredth of that devoured by good readers thus compromising their vocabulary development and, hence, comprehension (Lyon, 2001). Such vocabulary development is vitally dependent on the amount of reading, as conversation and television have much less impact on vocabulary growth than does reading (Cunningham & Stanovich, 1998).

Knowledge about the teaching of comprehension is less well advanced than it is for the lower-order decoding processes. It is known that passive reading is not consistent with adequate comprehension, and that when teachers model their own active comprehension processes for their students, and provide encouragement, guidance and regular practice opportunities - then students make superior progress than when teachers assume that such processes will develop naturally. Unfortunately, much of what passes for comprehension activities in schools involves testing students for their capacity to comprehend, rather than actually providing instruction. Activities that involve reading a text and subsequently answering questions are typical of this approach. One reason for the lack of direct teaching is that (as with decoding) few teachers receive training in research-based methods of comprehension instruction (Snow, 2002).

Some of the techniques that show promise in enhancing comprehension include learning how to monitor and query one's own comprehension, to organise the text information in a meaningful manner, or employ visualisation techniques (Mastropieri, Leinart, & Scruggs, 1999). A task once common in schools was instruction in how to produce a précis – a summary of what has just been read. Directly teaching the strategies involved in précis production, along with the active processing of information required by the task have also been shown to improve comprehension.

So, assisting readers to enhance their capacity to comprehend that which they read is a worthwhile activity. However, Mastropieri, Leinart, and Scruggs (1999), researchers with a long history in devising and evaluating metacognitive strategies, offer this timely caveat to those tempted to focus exclusively on comprehension strategies. “However, reading programs that do not attempt directly to enhance the reading fluency of dysfluent readers cannot be considered complete - no amount of comprehension training can compensate for a slow, labored rate of reading” (p.278).

Given the number of students who struggle with mastering reading, efficiency in the provision of initial teaching and subsequent support becomes very important for education systems (Rayner, Foorman, Perfetti, Pesetsky, & Seidenberg, 2001). There are several components of effective whole-system or whole-school approaches. Adequate time must be assigned to the task of providing initial reading instruction. Yet, it is

increasingly recognized that not all students require the same level of direct teacher input. A reduction in the number of students requiring significant one-to-one support allows additional time to be provided for the seriously struggling students. This circumstance can eventuate when initial instruction reflects effective, research-supported approaches, thereby producing fewer casualties and enabling the school to maintain at realistic levels the costs of providing intensive support. The reports from the USA, Great Britain and Australia have recognised alerted us to these issues, and it is now time to see them enshrined in educational practice for the benefit of all students.

References

- Alexander, J.C. (1998). Reading skill and context facilitation: A classic study revisited. *The Journal of Educational Research*, 9, 314-318.
- Alexander, K., Entwisle, D., & Olsen, C.R. (1997). *Early schooling and inequality: Socioeconomic disparities in children's learning*. London: Falmer Press.
- Apel, K., & Swank, L.K. (1999). Second chances: Improving decoding skills in the older student. *Language, Speech & Hearing Services in Schools*, 30, 231-243.
- Baker, S.K., Kame'enui, E.J., Simmons, D. C., & Stahl, S.A. (1994). Beginning reading: Educational tools for diverse learners. *School Psychology Review*, 23, 372-391.
- Bateman, B. (1991). Teaching word recognition to slow-learning children. *Reading, Writing and Learning Disabilities*, 7, 1-16.
- Blachman, B.A. (1991). Early intervention for children's reading problems: Clinical applications of the research in phonological awareness. *Topics in Language Disorders*, 12(1), 51-65.
- Bruck, M. (1990). Word recognition skills of adults with childhood diagnoses of dyslexia. *Developmental Psychology*, 26, 439-454.
- Carnine, D. (2000). *Why education experts resist effective practices (and what it would take to make education more like medicine)*. Washington, DC: Thomas B. Fordham Foundation. Retrieved September 12, 2005, from <http://ripolicyanalysis.org/carnine.pdf>
- Coleman, J., Campbell, E., Hobson, C., McPartland, J., Mood, A., Weinfeld, F.D., and York, R. (1966). *Equality of educational opportunity*. Washington D.C.: Department of Health, Education and Welfare.
- Crowley, K., Shrager, J. & Siegler, R. S. (1997). Strategy discovery as a competitive negotiation between metacognitive and associative mechanisms. *Developmental Review*, 17, 462-489.
- Cunningham, A.E., & Stanovich, K.E. (1998). What reading does for the mind. *American Educator*, 22(1&2), 8-15.
- Department for Education and Employment. (1998). *The National Literacy Strategy: Framework for Teaching*. London: Crown.
- Department for Education and Employment. (2002). *The National Literacy Strategy: The first four years 1998-2002*. OFSTED Report HMI 555. London: Crown.
- Department of Education, Employment & Training. (2001). *Consistency Project: Links between curriculum frameworks in Vic, SA and QLD in English*. Retrieved February 1, 2003, from <http://www.sofweb.vic.edu.au/assess/consist/englink.htm>
- Department of Education, Science and Training. (2005). *National Inquiry into the Teaching of Literacy*. Canberra: Commonwealth of Australia. Retrieved December 14, 2005, from http://www.dest.gov.au/nitl/documents/report_recommendations.pdf

- Ehri, L.C. (1998). Presidential address. In Joanna P. Williams (Ed.), *Scientific Studies of Reading Vol. 2*, (No. 2, pp. 97-114). Mahwah, NJ: Lawrence Erlbaum.
- Emmitt, M. (1996). *Have I got my head in the sand? - Literacy matters*. In 'Keys to life' Conference proceedings, Early Years of Schooling Conference, Sunday 26 & Monday 27 May 1996, World Congress Centre, Melbourne (pp. 69-75). Melbourne: Directorate of School Education. Retrieved 1/2/2003 from <http://www.sofweb.vic.edu.au/eys/pdf/Proc96.pdf>
- Felton, R.H., & Pepper, P.P. (1995). Early identification and intervention of phonological deficit in kindergarten and early elementary children at risk for reading disability. *School Psychology Review*, 24, 405-414.
- Foorman, B.R. (1995). Research on "the Great Debate": Code-oriented versus Whole Language approaches to reading instruction. *School Psychology Review*, 24, 376-392.
- Foorman, B.R., Francis, D.J., Beeler, T., Winikates, D., & Fletcher, J. (1997). Early interventions for children with reading problems: Study designs and preliminary findings. *Learning Disabilities: A Multidisciplinary Journal*, 8, 63-71.
- Fuchs, D., & Fuchs, L.S. (2005). Peer-assisted learning strategies: Promoting word recognition, fluency, and reading comprehension in young children. *The Journal of Special Education* 39(1), 34-44.
- Goodman, K.S. (1973). *Miscue analysis: Applications to reading instruction*. Urbana, Ill.: National Council of Teachers of English.
- Goodman, K.S. (1974, Sept). Effective teachers of reading know language and children. *Elementary English*, 51, 823-828.
- Goodman, K.S. (1985). Unity in reading. In H. Singer & R.B. Ruddell (Eds.), *Theoretical models and processes of reading* (pp. 813-840). Newark, DE: International Reading Association.
- Gough, P.B., & Wren, S. (1998). The decomposition of decoding. In C. Hulme & R.M. Joshi (Eds.), *Reading and spelling: Development and disorders* (pp. 19-32). Mahwah, NJ: Erlbaum.
- Gough, P.B., Alford, J.A., & Holley-Wilcox, P. (1981). Words and contexts. In O.J. Tzeng and H. Singer (Eds.), *Perception of print: Reading research in experimental psychology* (pp. 85-102). Hillsdale, NJ: Erlbaum.
- Greenberg, D., Ehri, L. C., & Perin, D. (1997). Are word reading processes the same or different in adult literacy students and third-fifth graders matched for reading level? *Journal of Educational Psychology*, 89, 262-275.
- Halfon, N., Schulman, E., & Hochstein, M. (2001). Brain development in early childhood. In N. Halfon, E. Schulman, & M. Hochstein (Eds.), *Building community systems for young children* (pp. 1-24). UCLA Center for Healthier Children Families and Communities.

- Harrison, B. (2002). Do we have a literacy crisis? *Reading Reform Foundation*, 48. Retrieved Dec 11, 2004, from <http://www.rrf.org.uk/do%20we%20have%20a%20literacy%20crisis.htm>
- Hempenstall, K. (1997). The whole language-phonics controversy: An historical perspective. *Educational Psychology*, 17, 399-418.
- Hempenstall, K. (1998). Miscue analysis: A critique. *Australian Journal of Learning Disabilities*, 3(4), 32-37.
- Hempenstall, K. (2003). The three-cueing system: Trojan horse? *Australian Journal of Learning Disabilities*, 8(3), 15-23.
- Hill, P. (1995). *School effectiveness and improvement: Present realities and future possibilities*. Deans Research Seminar Series. Inaugural Professorial Lecture, Faculty of Education, The University of Melbourne. Retrieved April 11, 1998, from http://www.edfac.unimelb.edu.au/Seminars/dean_lec/list.html
- Ingersoll, R. (1999, March). The problem of underqualified teachers in American secondary schools. *Educational Researcher*, 28(2), 26-37.
- Jencks, C.S., & Phillips, M. (1998). America's next achievement test. *The American Prospect*, 9(40). Retrieved Dec 11, 2003, from <http://www.prospect.org/print/V9/40/jencks-c.html>
- Jencks, C.S., Smith, M., Acland, H., Bane, M.J., Cohen, D., Ginitis, H., Heyns, B., & Michelson, S. (1972). *Inequality: A reassessment of the effect of family and schooling in America*. New York: Basic Books.
- Johnston, R.S., & Watson, J.E. (2003). *Accelerating reading and spelling with synthetic phonics: A five year follow up*. Edinburgh: Research, Economic and Corporate Strategy (RECS) Unit. Retrieved August 11, 2003, from <http://www.scotland.gov.uk/library5/education/ins4-00.asp>
- Joseph, J., Noble, K., & Eden, G. (2001). The neurobiological basis of reading. *Journal of Learning Disabilities*, 34, 566-579.
- Kamhi, A.G., & Catts, H.W. (1999). Reading development. In H.W. Catts & A.G. Kamhi (Eds.), *Language and reading disabilities* (pp. 25-50). Needham Heights, MA: Allyn & Bacon.
- Louden, W., Chan, L.K.S., Elkins, J., Greaves, D., House, H., Milton, M., Nichols, S., Rivalland, J., Rohl, M., & van Kraayenoord, C. (2000). *Mapping the territory—Primary students with learning difficulties: Literacy and numeracy* (Vols. 1-3). Canberra: Department of Education Training and Youth Affairs.
- Lyon, G.R. (2001). *Measuring success: Using assessments and accountability to raise student achievement*. Subcommittee on Education Reform Committee on Education and the Workforce U.S. House of Representatives Washington, D.C. Retrieved Dec 11, 2004, from http://www.nrrf.org/lyon_statement3-01.htm
- Macmillan, B. (2002). An evaluation of the Government's Early Intervention Initiative: The Early Literacy Support programme. *Reading Reform Foundation Newsletter*, 49. Retrieved February 1, 2003, from <http://www.rrf.org.uk/49%20Bonnie%20MacMillan%20Article.htm>

- Manzo, K.K. (2002). Some educators see reading rules as too restrictive. *Editorial Projects in Education*, 21(23), 1, 23, 24.
- Marks, G. N., & Ainley, J. (1997). *Reading comprehension and numeracy among junior secondary school students in Australia*. Melbourne: Australian Council for Educational Research.
- Mastropieri, M.A., Leinart, A.W., & Scruggs, T.E. (1999). Strategies to increase reading fluency. *Intervention in School and Clinic*, 34(5), 278-283, 292.
- Mathes, P.G., Howard, J.K., Allen, S.H., & Fuchs, D. (1998). Peer-assisted learning strategies for first-grade readers: Responding to the needs of diverse learners. *Reading Research Quarterly*, 33, 62-83.
- Moats, L. (2000). *Whole language lives on: The illusion of "balanced" reading instruction*. Washington, DC: Thomas B. Fordham Foundation. Retrieved May 11, 2003, from http://serafini.nevada.edu/WebArticles/Balance_files/Balance.htm
- Moats, L.C. (1994). The missing foundation in teacher education: Knowledge of the structure of spoken and written language. *Annals of Dyslexia*, 44, 81-102.
- Nagy, W. (1998). *Increasing students' reading vocabularies*. Presentation at the Commissioner's Reading Day Conference, Austin, Texas.
- Nagy, W.E., & Anderson, R.C. (1984). How many words are there in printed English? *Reading Research Quarterly*, 19, 304-330.
- National Center for Education Statistics (2005). *National Assessment of Educational Progress*. Washington, DC: Institute of Education Sciences, U.S. Dept. of Education. Retrieved September 14, 2005, from <http://nces.ed.gov/nationsreportcard/ltr/results2004/nat-reading-scalescore.asp>
- National Institute for Quality Teaching and School Leadership. (2005, August 25). National accreditation of pre-service teacher education. Retrieved October 15, 2005, from http://www.teachingaustralia.edu.au/home/What%20we%20are%20saying/media_release_pre_service_teacher_ed_accreditation.pdf
- National Reading Panel. (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction*. Washington, DC: U.S. Department of Health and Human Services. Retrieved 1/2/2003 from <http://www.nationalreadingpanel.org>
- Nelson, B. (2004). *Transcript address to the first meeting of the Committee of Inquiry into the Teaching of Literacy, Thursday 9 December 2004*, Parliament House, Canberra. Retrieved Dec 11, 2004 from <http://www.dest.gov.au/Ministers/Media/Nelson/2004/12/tran091204.asp>
- Newman, J.M. (1985). Using children's books to teach reading. In J.M. Newman (Ed.), *Whole language: Theory and use* (pp.55-64). Portsmouth, NJ: Heinemann.
- Nicholson, T. (1991). Do children read words better in context or in lists? A classic study revisited. *Journal of Educational Psychology*, 82, 444-450.

- Organization for Economic Cooperation and Development (OECD). (2003). *The PISA 2003 Assessment Framework: Mathematics, Reading, Science and Problem Solving Knowledge and Skills*. Paris: Author.
- Orr, E. (1994). *Australia's literacy challenge: the importance of education in breaking the poverty cycle for Australia's disadvantaged families*. Camperdown, NSW: The Smith Family, Research and Training Dept.
- Osborn, J.H., & Armbruster, B.B. (2001). Vocabulary acquisition: Direct teaching and indirect learning. *Basic Education Online Edition*, 46(3). Retrieved February 1, 2003, from <http://www.c-be.org/be/iss0111/a2osborn.htm>
- Pugh, K.P., Mencl, W.E., Jenner, A.R., Katz, L., Frost, S.J., Lee, J.R., Shaywitz, S.E., & Shaywitz, B.A. (2002). Neuroimaging studies of reading development and reading disability. *Learning Disabilities Research & Practice*, 16, 240-249.
- Rayner, K., Foorman, B.R., Perfetti, C.A., Pesetsky, D., & Seidenberg, M.S. (2001). How psychological science informs the teaching of reading. *Psychological Science in the Public Interest*, 2, 31-74. Retrieved February 1, 2003 from www.psychologicalscience.org/newsresearch/publications/journals/pspi2_2.html.
- Rohl, M., & Greaves, D. (2005). How are pre-service teachers in Australia being prepared for teaching literacy and numeracy to a diverse range of students? *Australian Journal of Learning Disabilities*, 10(1), 3-8.
- Rose, J. (2006). *Independent review of the teaching of early reading*. London, England: Department for Education and Skills (DfES). Retrieved March 20, 2006, from <http://www.standards.dfes.gov.uk/rosereview/finalreport/>
- Sanders, W., & Rivers, J. (1996). *Cumulative and residual effects of teachers on future student academic achievement*. Knoxville, TN: University of Tennessee Value-Added Research and Assessment Center.
- Savage, R., Stuart, M., & Hill, V. (2001). The role of scaffolding errors in reading development: Evidence from a longitudinal and a correlational study. *The British Journal of Educational Psychology*, 71, 1-13.
- Shankweiler, D., Lundquist, E., Katz, L., Stuebing, K.K., Fletcher, J.M., Brady, S., Fowler, A., Dreyer, L.G., Marchione, K. E., Shaywitz, S.E., & Shaywitz, B.A. (1999). Comprehension and decoding: Patterns of association in children with reading difficulties. *Scientific Studies of Reading*, 3, 69-94.
- Share, D.L. (1995). Phonological recoding and self-teaching: Sine qua non of reading acquisition. *Cognition*, 55, 151-218.
- Share, D.L., & Stanovich, K.E. (1995). Cognitive processes in early reading development: accommodating individual differences into a model of acquisition. *Issues in Education*, 1, 1-57.
- 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., Fletcher, J.M., Lyon, G.R., & Gore, J.C. (2004). Development of left occipitotemporal systems for skilled reading in children after a phonologically- based intervention. *Biological Psychiatry*, 55, 926-33.

- Simmons, D.C., Gunn, B., Smith, S.B., & Kameenui, E.J. (1995). Phonological awareness: Application of instructional design. *LD Forum*, 19(2), 7-10.
- Singh, N.N., Deitz, D.E.D., & Singh, J. (1992). Behavioural approaches. In Nirbay N. Singh, & Ivan L. Beale (Eds.) *Learning disabilities: Nature, theory, and treatment* (pp. 11-26). New York: Springer-Verlag.
- Smith, F. (1973). *Psychology and reading*. New York: Holt, Rinehart & Winston.
- Snow, C.E. (2002). *Reading for understanding: Toward a research and development program in reading comprehension*. Santa Monica, CA: Rand Corp. Retrieved Dec 11, 2003, from <http://www.rand.org/publications/MR/MR1465/>
- Snow, C.E., Burns, S., & Griffin, P. (Eds.) (1998). *Preventing reading difficulties in young children. Report of the National Research Council*. Retrieved February 1, 2003, from <http://www.nap.edu/readingroom/books/reading/>
- Spector, J. (1995). Phonemic awareness training: Application of principles of direct instruction. *Reading and Writing Quarterly*, 11, 37-51.
- Stanovich, K.E. (1990). Concepts in developmental theories of reading skill: Cognitive resources, automaticity and modularity. *Developmental Review*, 10, 72-100.
- Stanovich, K.E. (1980). Toward an interactive-compensatory model of individual differences in the development of reading fluency. *Reading Research Quarterly*, 26, 32-71.
- Stone, J.E. (2002, Nov). What education's policymakers can learn from the Enron collapse. *Education Consumers ClearingHouse*. Retrieved Dec 11, 2003, from <http://www.education-consumers.com/articles/Enron%20ecc.htm>
- Swanson, H.L. (2001). Research on interventions for adolescents with learning disabilities: A meta-analysis of outcomes related to higher-order processing. *The Elementary School Journal*, 101, 331-348.
- Thompson, G.B. & Nicholson, T. (Eds.) (1998). *Learning to read: Beyond phonics and whole language*. New York: Teachers College Press.
- Torgesen, J.K. (1998, Spring/Summer). Catch them before they fall: Identification and assessment to prevent reading failure in young children. *American Educator*. Retrieved Dec 11, 2003, from http://www.ldonline.org/ld_indepth/reading/torgeson_catchthem.html
- Torgesen, J.K., Alexander, A.W., Wagner, R.K., Rashotte, C.A., Kytja, K.S., & Conway, T. (2001). Intensive remedial instruction for children with severe reading disabilities: Immediate and long-term outcomes from two instructional approaches. *Journal of Learning Disabilities* 34(1), 33-58, 78.
- Torgesen, J.K., Wagner, R., Rashotte, C., Alexander, A., & Conway, T. (1997). Preventative and remedial interventions for children with severe reading disabilities. *Learning Disabilities: A Multidisciplinary Journal*, 8, 51-61.

- Tunmer, W.E., & Hoover, W.A. (1993). Phonological recoding skill and beginning reading. *Reading & Writing: An Interdisciplinary Journal*, 5, 161-179.
- Vellutino, F.R., Scanlon, D.M., Sipay, E.R., Small, S.G., Pratt, A., Chen, R., & Denckla, M.B. (1996). Cognitive profiles of difficult to remediate and readily remediated poor readers: Early intervention as a vehicle for distinguishing between cognitive and experiential deficits as basic causes of specific reading disability. *Journal of Educational Psychology*, 88, 601-638.
- Watson, J.E., & Johnston, R.S. (1998). Accelerating reading attainment: The effectiveness of synthetic phonics *Interchange*, 57. Edinburgh: SOEID. Retrieved August 11, 2003, from http://www.scotland.gov.uk/edru/Pdf/ers/interchange_57.pdf
- Weaver, C. (1988). *Reading process & practice: From socio-psycholinguistics to whole language*. Portsmouth, NH: Heinemann.
- Weir, R. (1990). Philosophy, cultural beliefs and literacy. *Interchange*, 21(4), 24-33.
- Wenglinsky, H. (June 30, 2003). Using large-scale research to gauge the impact of instructional practices on student reading comprehension: An exploratory study. *Education Policy Analysis Archives*, 11(19). Retrieved July 4, 2003, from <http://epaa.asu.edu/epaa/v11n19/>