Evidence-based literacy instruction in secondary schools: A worthwhile curriculum emphasis.

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Introduction:
Where do I come from? Teaching and school psychologist background
What do I stand for? I hate to see students trapped in the system that creates their failure
What are my biases? I am passionate about the potential of evidence based practice to reduce student failure
What's today about? I'm not really a researcher but a bower bird for research findings that are salient to our real
     world of schools
I want to tell you about that research

How the day is structured.
 • Examination of the themes highlighted a crucial in reading development and the necessary
   implementation characteristics
 • Discussion of the difficulties of self-designed approaches
 • Provision of information about **one** validated and viable approach to literacy programs in secondary
   school.

International trends in enhancing literacy attainment
In *Reading Today* journal, experts nominated the current "hottest" topics as: scientific reading research and
practice phonemic awareness, phonics, fluency, direct instruction, early intervention**.**

Around the world, there are too many students failing to learn to read.
Incidence of reading problems in Australia
Brendan Nelson (Federal Education Minister): **Whatever the reading methods that are being used to teach
our children in Australian schools, it is failing far too many children** (ABC 7.30 Report 03/02/2005 Child
literacy in Australia under scrutiny)

**There is little evidence to indicate positive effects of recent initiatives to 'improve' the literacy achievement
outcomes of students in Victorian Government schools at any Year level – particularly for underachieving
students** (p. 32).
Performance Audit of Literacy Standards in Victorian Government Schools, 1996-2002. Report to the Victorian
Auditor-General's Office June 2003 Ken Rowe and Andrew Stephanou, Australian Council for Educational
Research

**Literacy Standards in Australia noted that 27%of Year 3 and 29% of Year 5 students did not meet the
required standards in reading while the corresponding figures for writing were 28 per cent and 33 per
cent.**
Australian Council for Educational Research, Literacy Standards in Australia, Canberra, 1997.

**Australian survey data indicate that 30% of Australian teenagers have "not attained mastery in the
important area of reading." (p. 17)**
Marks, G. N., & Ainley, J. (1997). *Reading comprehension and numeracy among junior secondary school
students in Australia*. Melbourne: Australian Council for Educational Research.

30% of Australian students fail to become effective readers.
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.

In Australian schools, unacceptably low levels of literacy occur for 20-50% of students in schools serving educationally disadvantaged areas.
Hill, P. & Russell, J. (1994). *Resource levels for primary schools.* Report prepared as part of a review by the Commonwealth Government of recurrent funding for government primary schools. The University of Melbourne, Vic: Centre for Applied Educational Research.
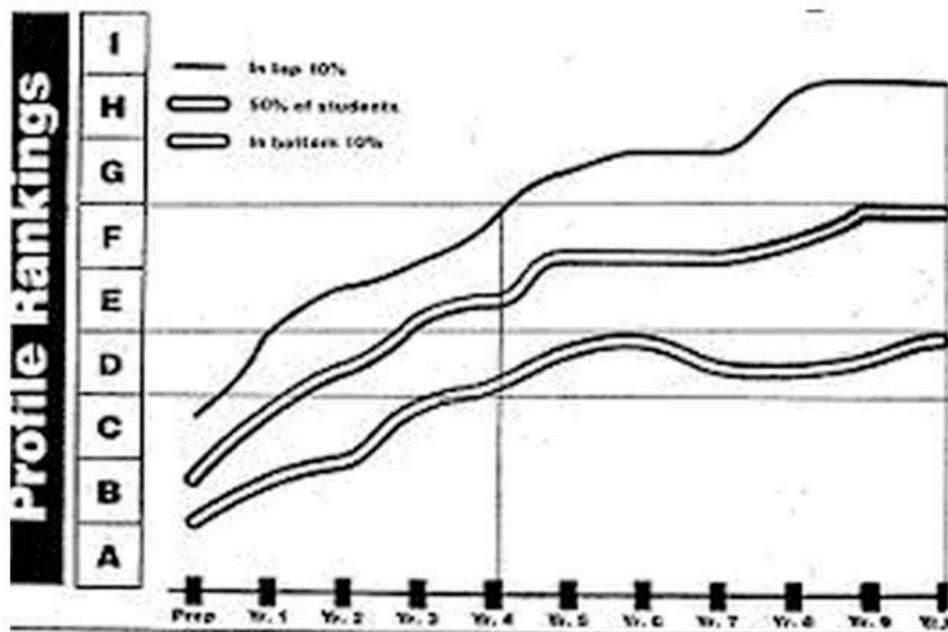
By Year 10, students at the 10th percentile in reading had progressed no further than Year 3 students at the 50th percentile.

The gap between achievement levels of different groups of students increases during the subsequent years of schooling. By Year 10, the lowest 10% have made no reading gains since Year 4.
Hill, P.W. (1995). School effectiveness and improvement: Present realities and future possibilities. Inaugural Professorial Lecture in *Dean's Lecture Series* Faculty of Education, Parkville, Vic: The University of Melbourne. Rowe, K.J. & Hill, P.W. (1996). Assessing and recording and reporting students' educational progress: The case for 'student profiles'. *Assessment in Education*, 3, 309-352.

Current incidence of reading problems in Australia depends on the benchmarks that are selected. 2003 Budget noted that 22% of Year 1 students would be funded for Reading Recovery.

Reading Recovery is provided to up to 100 per cent of students in any one school (notably small schools) and the average is 40 to 50% of students, well above the intended 20 per cent (Section 7.43, p.90) of students. In 2000 and 2001, 60 per cent and 57 per cent, respectively, of Victorian government schools allocated further funds to Reading Recovery from their School Global Budget.
Victorian Budget amounts:1999 ($27M), 2000 (28M), 2001 (31.4M), 2002 (30.6M), 2003 (28.7M)
Office of the Victorian Auditor General. (2003). *Improving literacy standards in government schools.* Retrieved 10/10/2004 from http://www.audit.vic.gov.au/reports_par/Literacy_Report.pdf

By adolescence, less than 25% of Victorian students who struggled in Year 2 had recovered.
Prior, M. (2001). Preparing early for success. The Age, Education Age, p.12-13.

In a study of 3000 Australian students, 30% of 9 year olds still hadn't mastered letter sounds, arguably the most basic phonic skill. A similar proportion of children entering high school continue to display confusion between names and sounds. Over 72% of children entering high school were unable to read phonetically

regular 3 and 4 syllabic words. Contrast this with official figures. In 2001, the Australian public was assured that 'only' about 19% of grade 3 (age 9) children failed to meet the national standards.
Harrison, B. (2002, April). Do we have a literacy crisis? *Reading Reform Foundation, 48*. Retrieved April 11, 2003 from http://www.rrf.org.uk/do%20we%20have%20a%20literacy%20crisis.htm

- **Australia's rate of early school leaving has not improved over the last decade**
- **poor literacy and numeracy skills are among factors accounting for early school leaving**

Business Council of Australia. (2003). The cost of dropping out: The economic impact of early school leaving. Retrieved 12/2/03 from http://www.bca.com.au/upload/The_Cost_of_Dropping_Out.pdf

60% of the 13 to 16 year old adolescents in a Smith Family study of 500 disadvantaged families had not progressed beyond a grade 4 reading level.
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.

Indigenous students remain the most educationally disadvantaged group of young Australians.
Marks, G., McMillan, J., Ainley, J., (2004, April 20). Policy issues for Australia's education systems: Evidence from international and Australian research. *Education Policy Analysis Archives, 12*(17). Retrieved [Date] from http://epaa.asu.edu/epaa/v12n17

Only 40% of indigenous students achieved at least proficiency Level 3 in reading.
Lokan, J., Greenwood, L., & Cresswell, J. (2001). *15-up and counting, reading, writing, reasoning : How literate are Australian students? The PISA 2000 survey of students' reading, mathematical and scientific literacy skills.* Melbourne, Australia: ACER Press.

The National School English Literacy Survey indicated that 27 per cent of Year 3 and 29 per cent of Year 5 students did not meet the agreed standard in reading. The survey also showed that boys were well behind girls in terms of their literacy development and that many indigenous students could not read or write satisfactorily (p. 15).
Masters, G.N., & Forster, M. (1997). *Literacy standards in Australia*. Commonwealth of Australia: Canberra, ACT.

The school progress of older low-progress readers (Years 5 to 8) who are at least two years behind in terms of reading skill, and who do not receive intensive remedial support, typically make progress at about half normal rate
Wheldall, K., & Beaman, R. (2000). *An evaluation of MULTILIT: 'Making Up Lost Time In Literacy'*. Canberra: Department of Education, Training and Youth Affairs. Retrieved 3/6/2003 from http://www.dest.gov.au/schools/literacy&numeracy/publications/multilit/summary.htm

66% of Australian employers consider that high-school leavers are not sufficiently literate to enter the workforce.
Croucher, J.S. (2001, July 21). Number crunch (*The Age*, p.13).

30% of students do not complete school (quote from Professor Peter Hill).
Our Desperate Schools. The Age 5/8/2000.

In Australia efforts to improve student performance need to be directed to less-successful students within schools rather than to improving particular schools.
Marks, G., McMillan, J., Ainley, J., (2004, April 20). Policy issues for Australia's education systems: Evidence from international and Australian research. *Education Policy Analysis Archives, 12*(17). Retrieved 20/4/2004 from http://epaa.asu.edu/epaa/v12n17.

In Victorian primary schools, **differences among classrooms within schools were greater than differences among schools.** Differences between classrooms are important, and it is **what individual teachers do that is crucial for student learning.**
Hill, P., & Rowe, K. J. (1996). Multilevel modelling in school effectiveness research. *School Effectiveness and School Improvement*, *7*(1), 1-34.

Australia's rate of early school leaving has not improved over the last decade - poor literacy and numeracy skills are factors accounting for early school leaving.
Business Council of Australia. (2003). *The cost of dropping out: The economic impact of early school leaving.* Retrieved 12/2/03 from http://www.bca.com.au/upload/The_Cost_of_Dropping_Out.pdf

Teachers themselves are not always good at rating student achievement, as their ratings tend to be strongly affected by student behaviour and motivation, crediting the most attentive and interested with higher achievement.
Goldenberg, C., Gallimore, R., Reese, L., & Garnier, H. (2001). Cause or effect? A longitudinal study of immigrant Latino parents' aspirations and expectations and their children's school performance. *American Educational Research Journal, 38*, 547-582.

Of particular concern, however, were the 10% of low progress readers who were not identified as such by their classroom teachers, and the 18% of teachers who identified, as low progress readers, students who were not in fact, very different from the lowest of the readers regarded as average (p.4).
Madelaine, A. & Wheldall, K. (2003). Can teachers discriminate low-progress readers from average readers in regular classes? *Australian Journal of Learning Disabilities, 8*(3), 4-7.

M:F ratio of referrals by teachers is about 4:1
Shaywitz, S. E. & Shaywitz, B. A. (1988). Attention-deficit disorder: Current perspectives. In J. F. Kavanagh & T. J. Truss (Eds.). *Learning disabilities: Proceedings of the national conference*. Parkson, MD: York Press.

Males and females are represented equally in the population with reading disability
Alexander, D., Gray, D.B., & Lyon, G.R. (1993). Conclusions and future directions. In G.R. Lyon, D.B. Gray, J.F. Kavanagh, & N.A. Krasnegor (Eds.), *Better understanding of learning disabilities: New views from research and their implications for education and public policies (p.1-13).* Baltimore: Brooks.

Shaywitz et al found a research-identified incidence of reading disability of 8.7% of boys and 6.9% of girls. However, a teacher-identified incidence of the same population identified 13.6% of boys and only 3.2% of girls. The authors suggested that greater reports of behavioral difficulties among boys in the classroom may have lead to this bias.
Shaywitz, S.E., Shaywitz, B.A., Fletcher, J.M., & Escobar, M.D. (1990). Prevalence of reading disability in boys and girls. *Journal of the American Medical Association, 264*, 998-1002.

Of 272 Victorian teachers (P-2), 77 % relied on whole language, and 6% followed a structured program. 51% had no specific teaching of phonics in their program, 22 per cent indicated that they included teaching of phonics as and when necessary (implicit phonics), while 27 per cent of teachers indicated that they included systematic teaching of phonics as a part of their teaching program.
de Lemos, M. (2002). *Closing the gap between research and practice: Foundations for the acquisition of literacy*. Camberwell: Australian Council for Educational Research.

In my sample of 340 teachers, both pre service and in service, only 54% knew what a syllable was and only 24% could correctly count the number of phonemes in a word. As for knowledge of schwas, diphthongs, voiced versus unvoiced sounds, forget it!
Fielding-Barnsley, R. & Purdie, N. (2005). Teachers' attitude to and knowledge of metalinguistics in the process of learning to read. *Asia-Pacific Journal of Teacher Education, 33*(1), 65-76.

"A person who is not at least a modestly skilled reader by the end of third grade is quite unlikely to graduate from high school." - *Preventing Reading Difficulties in Young Children,* National Research Council (1998).

See survey Louden et al. (in press). Australian Journal of Learning Disabilities
Federal government initiated survey
- Australia-wide
- 680 new graduates
- 307 schools' senior staff surveyed

Beginning primary teachers who felt unprepared to teach reading	36%
Beginning secondary teachers who felt unprepared to teach reading	51%
Beginning teachers rated by senior staff as unprepared to teach reading	49%
Beginning primary teachers who felt unprepared to teach phonics	57%
Beginning secondary teachers who felt unprepared to teach phonics	75%
Beginning teachers rated by senior staff as unprepared to teach phonics	65%

Beginning teachers' readiness to teach literacy to students with diverse needs?
Percentage of responses indicative of teacher confidence

	Primary	Secondary	Senior staff confidence in beginning teachers' competence
ESL	33%	26%	15%
Indigenous	38%	41%	12%
Low SES	45%	43%	22%
Disabilities	43%	45%	11%
Learning difficulties	54%	53%	17%

- The often heard view that remedial instruction for students beyond Year 2 is ineffective may have been true, but this is a criticism of the ineffectiveness of past programs, not a necessary truth. We can rehabilitate older low-progress readers, as we have shown, with effective programs based on contemporary, empirically validated best practice, if we have the will and the resources to do so.

Wheldall, K., & Beaman, R. (2000). *An evaluation of MULTILIT: 'Making Up Lost Time In Literacy'*. Canberra: Department of Education, Training and Youth Affairs. Retrieved 3/6/2003 from
http://www.dest.gov.au/schools/literacy&numeracy/publications/multilit/summary.htm

What are the consequences of literacy problems?

Statistically, more children suffer long-term life-harm from problems in learning to read than from parental abuse, accidents, and all other childhood diseases and disorders *combined*.
Dr. Grover Whitehurst, Director Institute of Education Sciences, Assistant Secretary of Education, U.S. Department of Education (9-10-03 Children of the Code interview)
http://www.childrenofthecode.org/cotcintro.htm

Australian Bureau of Statistics has reported a 16 per cent unemployment rate for people with poor literacy skills compared to a 4 per cent rate for those with very high literacy levels.
Craig Ashdown and AAP, 'Literacy 'crisis' denied', Education Review, vol. 2, no. 6, July 1998, p. 1.

By the secondary grades, struggling readers have little confidence in their ability to succeed in reading and little sense of themselves as readers (Collins, 1996). Guthrie, Alao, and Rinehart (1997) noted an "eroding sense of confidence" in these students. They are acutely aware of their reading problems (Wigfield & Eccles, 1994) and

likely to suffer serious psychological consequences, including anxiety, low motivation for learning, and lack of self-efficacy.
Peterson, C.L., Caverly, D.C., Nicholson, S.A.,.O'Neal, S., & Cusenbary, S. (2003). Building reading proficiency at the secondary level: A guide to resources. Austin, TX: Southwest Educational Development Laboratory. Retrieved 2/2/2004 from

Behaviour problems among children with learning disorders are about 3 times than the norm by 8 years of age
Mash, E.J., & Wolfe, D.A. (2002). *Abnormal child psychology.* Belmont, CA: Wadsworth Thomson Learning.

Young boys with reading problems were three times more likely to report high levels of depressed mood than their peers. The reading problems influenced boys' risk of depressed mood.
Maugban, B. (2003). Reading problems and depressed mood. *Journal of Abnormal Child Psychology, 31*, 210-229.

Isn't it largely a motivation problem?
At pre-school age, there were no clear differences in motivation, but distinctly different patterns of motivation developed as a function of reading success. The slow reading groups increasingly displayed lower task orientation, and higher ego-defensiveness and social dependency over time than successful groups.
Lepola, J., Salonen, P., & Vauras, M. (2000). The development of motivational orientations as a function of divergent reading careers from pre-school to the second grade. *Learning and Instruction, 10*, 153–177.

We have not found evidence that boosting self-esteem (by therapeutic interventions or school programs) causes benefits. Our findings do not support continued widespread efforts to boost self-esteem in the hope that it will by itself foster improved outcomes. In view of the heterogeneity of high self-esteem, indiscriminate praise might just as easily promote narcissism, with its less desirable consequences.
Baumeister, R. F. Campbell, J. D., Krueger, J. I., & Vohs, K. D. (2003). Does high self-esteem cause better performance, interpersonal success, happiness, or healthier lifestyles? *Psychological Science in the Public Interest, 4*(1), 1-44. http://www.psychologicalscience.org/journals/pspi/4_1.html

A recent synthesis examining the effects of intervention research on the *self-concept* of students with LD indicates at the elementary level that *academic interventions* are the most effective means of improving self-concept (Elbaum & Vaughn, 1999).

Aren't these failing students learning disabled?
"Learning disabilities have become a sociological sponge to wipe up the spills of general education…. It's where children who weren't taught well go."
G. Reid Lyon, National Institute of Child Health and Human Development LA Times 12/12/1999
http://www.latimes.com/news/state/reports/specialeduc/lat_special991212.htm

The true incidence of verbal learning disability lies between 3-6% of the population, not 20-30%.
Marshall R.M. & Hynd, G.W. (1993). Neurological basis of learning disabilities. In William W. Bender(Ed.) *Learning disabilities: Best practices for professionals*. USA: Butterworth-Heinemann.

A "significant number of children labelled learning disabled or dyslexic could have become successful readers had they received systematic and explicit instruction and intervention far earlier in their educational careers."
California State Taskforce, 1999. http://www.latimes.com/news/state/reports/specialeduc/lat_special991212.htm

Why the interest in early identification?
Initial failure predicts future failure
• 90% of poor readers in first grade are poor readers in fourth grade (Juel, 1988)
• 74% of children who are poor readers in the third grade remain poor readers in the ninth grade (Francis et al., 1996)

- Many children with difficulty in learning to read develop a negative self concept within their first two years of schooling (Chapman, Tunmer, & Prochnow, 2000)

The gap widens over time
At best, our current efforts simply perpetuate the differences that children arrive at school with; at worst, we exaggerate these differences across the time they spend with us (Allington, 1991).

Remedies are long, slow, often unsuccessful, and student resistance can preclude success
In a large scale study of reading disabilities (*n* = 10,000),
- 82% of those diagnosed in Grades 1 or 2,
- 46% in Grade 3,
- 42% in Grade 4, and
- 10-15% in Grades 5-7 were brought up to grade level (Berninger et al., 1987)

Between ages 4 and 6, the brain is pruning synapses - connections between brain cells. After then it is more difficult to establish specialised functions, and undo established pathways.

Reading-intelligence causal link?
Reading itself is a moderately powerful determinant of *vocabulary growth, verbal intelligence,* and *general comprehension ability* (Stanovich, 1993)

Females are currently under-identified.
A growing body of research suggests that females experiencing learning difficulties are not identified as frequently as males (Njiokiktjien, 1993)

What about the very early preschool years? Aren't they important too?
Educational experiences in preschool cannot completely compensate for the educational deprivation that can occur during the first 3 years. **Early vocabulary development** is particularly critical. Parents with *professional* jobs spoke about 2,000 words an hour to toddlers. For *working-class* parents it was 1,200 words an hour, and for those *on welfare* only 600 words an hour. By age three, children from privileged families have heard 30 million more words than children from poor families. By kindergarten the gap is even greater. The consequences are catastrophic.
Hart, B., & Risley, T.R. (2003, Spring). The early catastrophe: The 30 million word gap. *American Educator*. Retrieved April 11, 2003 from http://www.aft.org/american_educator/spring2003/catastrophe.html

Compared to children from the families in the highest fifth of socioeconomic status, the kindergartner whose family falls in the lowest fifth:
- Owned just 38 books, compared to the 108 owned by the top fifth, and was read to much less often
- Was far less likely to have a computer in the home (20% versus 85%)
- Was much less likely to have been taken to a museum, a public library, a play, or to have participated in dance, art, music, or crafts classes.
- Spent the most hours per week watching television (18 versus 11 hours)
- Was far more likely to have only one parent (48% versus 10%) and to have moved around more.

Lee, V.E. & Burkam, D.T. (2002). *Inequality at the starting gate: Social background differences in achievement as children begin school*. USA: The Economic Policy Institute.

Children who do not receive a strong language and emergent literacy foundation during the preschool years frequently have difficulties comprehending and using language and developing strong reading and writing abilities throughout their school tenure.
Children from poor families are still much more likely to enter school with limited vocabularies, meagre early literacy and other pre-academic concepts, and a motivation to learn that is already on the wane.
The major perpetuating factor is school failure, which, in turn, is typically the result of reading failure in school. The cycle goes on! But it doesn't have to.

It is likely that these mothers cannot read well enough to read to their new babies or to their other children. Unless we do something of substance for those babies, they will most likely be repeating this cycle with their own newborns over the next two decades.

Lyon, G.R, (2001, July 30). Summary comments White House Early Childhood Cognitive Development Summit. *Education News Org*. [On-Line]. Available:
http://www.educationnews.org/white_house_early_childhood_cogn.htm

It is very important for us to reflect honestly and objectively on why the development of a science of early childhood has been so long in developing and why so many of our children continue to flounder once they reach kindergarten and elementary school. To be blunt, one reason is that many people working with our young children DO NOT KNOW WHAT THEY DO NOT KNOW. Let me be even more blunt. Much of the thinking in the early childhood education community over the past three decades has been predicated upon faulty assumptions and beliefs about development, appeals to scientific authorities that actually did not explicitly or carefully address the issues we are discussing here, and less than rigorous or informed scientific study.

Lyon, G.R, (2001, July 30). Summary comments White House Early Childhood Cognitive Development Summit. *Education News Org*. [On-Line]. Available:
http://www.educationnews.org/white_house_early_childhood_cogn.htm

President Bush's "Good Start, Grow Smart" initiative includes the following elements:
http://www.nsba.org/sbn/02-apr/042302-1.htm. April 24 2002
- Federal support for high-quality early childhood education programs is critical "if this nation is to make significant gains in the academic performance of our public school students."
- Provide large funding increases for early childhood education.
- States to develop guidelines on building pre-reading and language skills aligned with state K-12 standards.
- Implement a national training program for 50,000 Head Start teachers in early literacy teaching techniques.
- $45 million research collaboration between the National Institute of Child Health and Human Development and the Education Department to identify effective pre-reading and language curricula and teaching strategies.

Recent Event in the USA and Great Britain
The National Reading Panel reports a combination of teaching phonics, word sounds, and giving feedback on oral reading is the most effective way to teach reading. April, 2000 http://www.nichd.nih.gov/new/releases/nrp.htm

In the largest, most comprehensive evidenced-based review ever conducted of research on how children learn reading, a Congressionally mandated independent panel has determined that effective reading instruction includes teaching children to break apart and manipulate the sounds in words (phonemic awareness), teaching them that these sounds are represented by letters of the alphabet which can then be blended together to form words (phonics), having them practise what they've learned by reading aloud with guidance and feedback (guided oral reading), and applying reading comprehension strategies to guide and improve reading comprehension.

According to research, instruction is the major influence on at-risk student reading progress

The Effect of Different Teachers On Low-Achieving Students
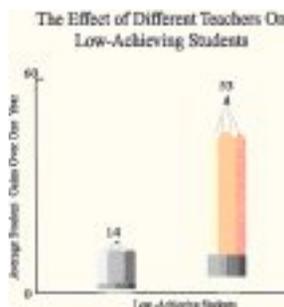
Students in classes with effective teachers for 3 years in a row achieved 50% more learning than those in classes with poor teachers.

Hanushek (1992) finds that, all else equal, a student with a very high quality teacher will achieve a learning gain of 1.5 grade level equivalents, while a student with a low-quality teacher achieves a gain of only 0.5 grade level equivalents. Thus, *the quality of a teacher can make the difference of a full year's learning growth.*

Our findings for various student subgroups are consistent with previous findings that teacher quality has a larger impact on poor students than on higher income students (Coleman, 1990).

Heritability of IQ at the low end of the wealth spectrum was just 0.10 on a scale of zero to one, while it was 0.72 for families of high socioeconomic status. The emerging view allows that genes can influence the impact of experiences and experiences can influence the "expression," or activity levels, of genes. Results demonstrate that the proportions of IQ variance attributable to genes and environment vary nonlinearly with SES. The models suggest that in impoverished families, 60% of the variance in IQ is accounted for by the shared environment, and the contribution of genes is close to zero; in affluent families, the result is almost exactly the reverse. Turkheimer, E., Haley, A. Waldron, M., D'Onofrio, B., Gottesman, I.I. (2003). Socioeconomic status modifies heritability of IQ in young children. *Psychological Science, 14*, 623-628.

There are 3 main areas to consider in developing curricula: the most salient themes or content; the combination of those themes (design); and, the details of the teaching process itself (presentation).

National Reading Panel
For its review, the **National Reading Panel** selected research from the approximately **100,000 reading research studies that have been published since 1966, and another 15,000 that had been published before that time.** Because of the large volume of studies, the panel selected only experimental and quasi-experimental studies, and among those considered only studies meeting rigorous scientific standards in reaching its conclusions.

The panel found that the research conducted to date strongly supports the concept that **explicitly and systematically teaching children to manipulate phonemes** significantly improves children's reading and spelling abilities. The evidence for this is so clear cut that this method should be an important component of classroom reading instruction.

The panel also concluded that the research literature provides solid evidence **that phonics instruction produces significant benefits for children from kindergarten through 6th grade** and for all children having difficulties learning to read. The greatest improvements in reading were seen from **systematic phonics instruction**. This type of phonics instruction consists of teaching a planned sequence of phonics elements, rather than highlighting elements as they happen to appear in a text. Here again, the evidence was so strong that the panel concluded that **systematic phonics instruction is appropriate for routine classroom instruction.**

For children with learning disabilities and children who are low achievers, systematic phonics instruction, combined with synthetic phonics instruction produced the greatest gains. **Synthetic phonics instruction consists of teaching students to explicitly convert letters into phonemes and then blend the phonemes to form words.** Moreover, systematic synthetic phonics instruction was significantly more effective in improving the reading skills of children from low socioeconomic levels. **Across all grade levels, systematic synthetic phonics instruction improved the ability of good readers to spell.**

President Bush's campaign pledge - make sure every primary school child can read. The White House is doling out millions of dollars to local communities for early-reading phonics programs - whole language programs are ineligible. Federal reading plan funds phonics. 17 March 2002
http://www.educationnews.org/cgi-bin/webbbs/reading/reading_list.pl?rev=638

The *No Child Left Behind Act* ($6 billion over 5 years) provides grants for state and local school districts in which students are systematically and explicitly taught five key components of early reading.
- Phonemic Awareness: The ability to hear and identify individual sounds in spoken words.
- Phonics: The relationship between the letters of written language and the sounds of spoken language.
- Fluency: The capacity to read text accurately and quickly.
- Vocabulary: The words students must know to communicate effectively.
- Comprehension: The ability to understand and gain meaning from what has been read.

US Department of Education. (2002). *The facts: Reading achievement*. [On-Line]. Available: http://www.nochildleftbehind.gov/start/facts/reading.html

Major changes in the United Kingdom too

In the United Kingdom, the National Literacy Strategy (1998) prescribes that pupils must be taught to:
- discriminate between the separate sounds in words;
- learn the letters and letter combinations most commonly used to spell those sounds;
- read words by sounding out and blending their separate parts;
- write words by combining the spelling patterns of their sounds.

Lightfoot, L. (1998, Mar 20). Schools told how to teach reading. The Electronic Telegraph (London Telegraph).

- "The vast majority of English schools have now moved to an acceptance that phonics needs to be taught, both for reading and for spelling."
- The less successful schools lacked a consistent approach to phonics, with too many different methods in use in classrooms.
- "There is still much further to go before the quality of the teaching is good enough".
- OFSTED said teachers had not had enough training

Phonics teaching 'not sound enough' BBC News Monday, 29 October, 2001
http://news.bbc.co.uk/hi/english/education/newsid_1626000/1626512.stm

The new UK Government strategies:
- Research has proved that structured phonics is the most effective way to teach reading.
- All primary schools to adopt *structured* teaching of phonics, and to abandon the present whole language system.
- The WL practice of emphasis on familiar and predictable texts leads to an over-reliance on guessing from context.
- Most schools claim to teach phonics as part of a "mixture of methods", but such *incidental* phonics is insufficient.
- Funds are provided for in-service teacher training because the vast majority of teachers have not been trained how to teach phonics.
- Schools to schedule daily, hour-long English lessons:

2/3 class activities- choral reading, vocabulary, punctuation, grammar and spelling.

1/3 in small groups matched for skill level, the teacher giving direct instruction with one group while the remainder work independently.

How do we know this phonological emphasis is not just the next fad?

Maybe brain-imaging techniques can shed light?

What's happening in the brain when a good reader confronts text?
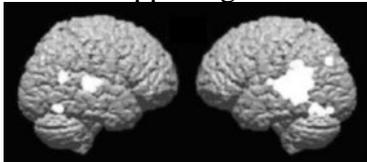
Right hemisphere   Left hemisphere

Good readers use three areas in the left side of the brain - their function is to decode letters into sounds, fit them together to make words, and process them fluently.

Student learns
- The letters of the alphabet,
- the sounds that the letters represent,
- the sounds are blended to build words.
- The left brain's parieto-temporal region can then be used in decoding (sounding out)
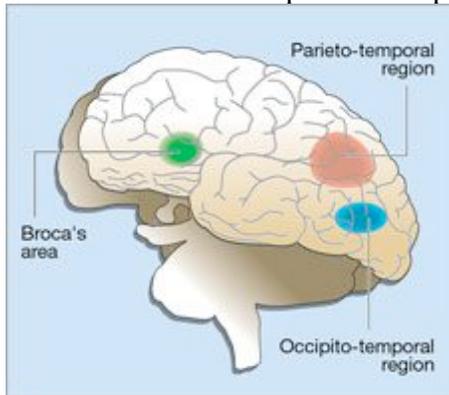
- then, progressively, as they see words in print, they start to build a *neural model* of that word.
- After they've read the word correctly a number of times, their *neural model* is an exact replica of the printed word.
- It reflects the way the word is pronounced, the way it's spelled, and what it means. In the exact neural model, all these features are bonded together.
- They clarify their internal representation, or neural model in the *occipito-temporal region.*
- That word is represented in the *occipito-temporal region*, and its recognition becomes instant & automatic - less than 150 milliseconds (less than a heartbeat).
- You can't go straight to the *occipito-temporal region* without building up the parieto-temporal region.
- On average, from 4-14 accurate sounding-outs will create the firm links necessary.
- For some children, it may take many times that number – not all children have a strong phonological talent.
- A genetic component and an environmental component may be involved.
- Those who 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

If this process does not occur - then children will be forced to employ less fast and accurate systems such as prediction from context and guessing from pictures and guessing from the first letter. Up to 40% of children will figure out the alphabetic principle for themselves quite readily - regardless of instruction, about 30% will get there - but slowly, about 20-30% will not make it without intensive, appropriate direct teaching.

What's happening when a poor reader confronts text?
For the *poor reader* there is compensatory activity in the visual centres of the right hemisphere - looking at words as if they were pictures.

Little activity in phonological areas of the left hemisphere - where capable readers' activity is dominant
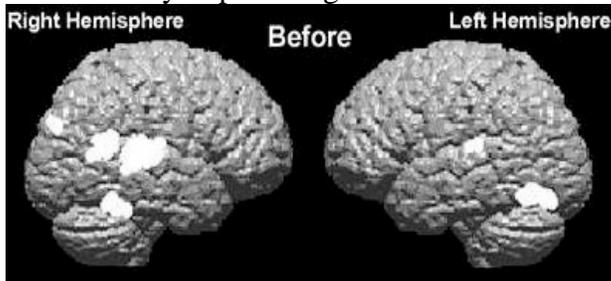

The brains of people who can't sound out words look different - less blood flow to the language centres of the brain. Without the ability to sound out words, the brain is stumped (Lally & Price, 1997).

After 60 hours structured intensive phonics teaching (Lyon & Fletcher, 2001)

Less right hemisphere involvement, more left hemisphere phonologically-based activity as reading improves. This also corresponds to the pattern displayed by good readers.

From formerly struggling readers
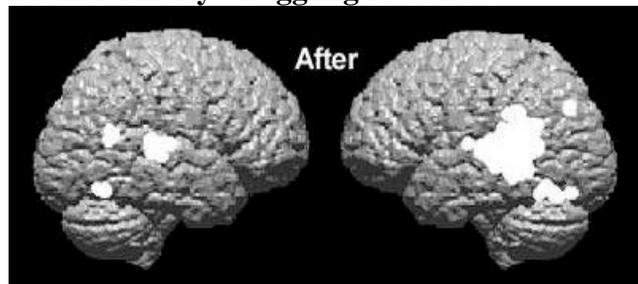
Right hemisphere   Left hemisphere

A Shaywitz et al. study just published:

Poor readers were provided with 50 minutes of daily, individual tutoring that was explicit, systematic and focused on helping children understand the alphabetic principle. Increased fluency, accuracy and comprehension at post-test and at 1 year later. The occipitotemporal region continued to develop 1 year after the intervention had ended

Each lesson was built around a five-step plan that included 1) a review of sound– symbol associations (e.g., giving the name, sound, and key word for each letter, as in "a says /a/ as in apple"); 2) practice in phoneme analysis and blending by manipulating letter cards or scrabble tiles to make new words (e.g., changing *sat* to *sap* to *sip* to *slip*); 3) timed reading of previously learned words to develop fluency; 4) oral reading of stories; and 5) dictation of words with phonetically regular spelling-sound patterns (e.g., *chap, spin*).

In this last step, children were encouraged to stretch out the word (say it slowly) before spelling it, to emphasize the phonologic and orthographic connections. In the final few minutes of the lesson, tutors could add extended activities, such as additional text reading, writing, or games to reinforce skills.

Children practiced reading both decodable books (books that include a high percentage of words with phonetically regular spelling-sound patterns) and trade books that do not emphasize phonetically regular text (e.g., traditional stories that appeal to children of this age, such as the *Arthur* series by Marc Brown). As reading proficiency increased, the amount of time spent reading phonetically controlled text decreased, and a wider variety of both narrative and expository texts were introduced to increase fluency, comprehension, and a sense of enjoyment.

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.

The program employed was:
Blachman, B.A., Schatschneider, C., Fletcher, J.M., & Clonan, S.M. (2003). Early reading intervention: A classroom prevention study and a remediation study. In B.R. Foorman (Ed.), *Preventing and remediating reading difficulties: Bringing science to scale* (pp. 253–271). Timonium, MD: York Press.

Why do struggling readers avoid reading?
The poor reader expends between 4 and 5 times the energy as controls for the same phonological tasks in the left anterior, or frontal, lobe of the brain (Richards et al. 1999).

So what's the prize?
Persistent reading problems can be reduced to 2-5% of at-risk students with early, appropriate and at times, intensive, instruction. (Brown & Felton, 1990; Felton, 1993).

The instruction should be structured and explicit - greater explicitness results in greater gains. Less than 3% of the population remained severely impaired after intensive (80 hours) of one-on-one instruction intervention Torgesen, J., 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.

20 million (US) children today suffering from reading failure could be reduced by approximately two-thirds. 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. [On Line]. Available: http://www.nrrf.org/lyon_statement3-01.htm

The overall rate of severe impairment dropped to 3% after one semester and 1.5% after two semesters of intervention (40-80 hours) in first year.
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.

If you identify very-high-risk poor readers (bottom 20 percent of reading ability) in kindergarten and first grade and give them effective, evidence-based instruction, at least 75 percent of this 20 percent will read (Lyon, 2000). Landauer, R. (2000). Facing up to infirmities in special ed. *The Oregonian,* December 2.

In studies in Houston, the overall rate of severe impairment for children who received such explicit instruction for one school year was 4.5% of the total population (Alexander et al., 1997).

Intensity, duration, and teacher training/monitoring are important program elements.
Report of The Charter G: Ad Hoc Special Committee On Persistent Reading Difficulties. [On-Line]. Available at: http://www.readbygrade3.com/peer.htm

The Panel refers to phonemic awareness: What's it about?
To my mind, the discovery and documentation of the importance of phonemic awareness ... is the single most powerful advance in the science and pedagogy of reading this century.
Adams, M.J. (1991). Beginning to read: A critique by literacy professionals and a response by Marylin Jager Adams. *The Reading Teacher, 44,* 392.

Phonemic awareness: The conscious realization that words can be decomposed into discrete single sounds (phonemes). It enables the beginning reader to appreciate the logic of the alphabetic system.

A "phoneme" is a single sound - a distinctive linguistic unit that contrasts, or causes to be different, words such as *house, mouse, louse*. It is not simply hearing the differences but also being able to identify them.

Hear the differences between *goal* and *gold*, *boost* and *boast*, *unanimous* and *anonymous, poetry* and *poultry*?
Phonemic awareness enables the appreciation that:
Camp and *soap* end with the same sound
Blood and *brown* begin with the same sound
Removing the /*t*/ from *stand* leaves the word *sand*.

During this (prior to school) period, the word may be used but not noticed by the child, and frequently it presents things seemingly like a glass through which the child looks at the surrounding world, not making the word itself the object of awareness, and not suspecting that it has its own existence, its own aspects of construction.
Luria, A. A. in Dowling, J. (1979). *Reading and reasoning.* New York: McMillan.

Why is it important?
Phonemic awareness enables the beginning reader to appreciate the logic of our alphabetic writing system.

From cave drawings, to cuneiform (2000 BC) and hieroglyphics to the written alphabet. Phoenician alphabetic writing dates from 1000 B.C. It was "a conscious and free creation by one man" (Jensen, 1970)

The originator of the alphabet analysed his own speech sounds and how they were articulated. He then devised visual patterns for the sound differences that he could hear in spoken words. He produced a symbolic system that represents a limited number of distinct speech sounds by single characters - called the alphabetic principle

It is one of mankind's greatest achievements. The appreciation of this code is the task of every new reader. As a beginning, the child must be sensitised to the underlying speech sounds that form spoken words. That sensitivity is phonemic or phonological awareness. It is not auditory discrimination. Hearing the differences between similar sounding spoken words involves auditory discrimination - but knowing how those words differ requires some phonemic awareness.

Phonemic awareness: Comes naturally?
No! We are biologically wired for speaking, but writing is a recent invention – and relatively few cultures developed a written language.

Nearly one third of first-graders fail to fully realize the phonemic structure of words (Adams, 1990). The proportion is much higher in disadvantaged children (Raz & Bryant, 1990; Robertson, 1993). Teachers who are literate and experienced generally have an insufficient grasp of spoken and written language structure and would be unable to teach it explicitly to either beginning readers or those with reading/spelling disabilities.
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.

"Learning to read is not just one of the goals of schooling. It is essential if students are to succeed in any grade, in any subject. According to the National Reading Panel, only about 5% of children learn to read effortlessly. About 60% find early reading difficult, and of that number, 20-30% really struggle. By fourth grade, the seriousness of the problem for these children becomes obvious" p.34.
Lewis, L. & Paik, S. (2001). *Add it up: Using research to improve education for low-income and minority students*. Washington: Poverty & Race Research Action Council. [On-Line]. Available: http://www.prrac.org/additup.pdf

Coarticulation makes mastery difficult: The letter "p" in "pin" (which is aspirated and released) sounds different to the letter "p" in "spin" (which is neither aspirated nor released); likewise, the letter "k" in "keep" versus the "k" in "stack." The phonemes are influenced by their neighbors. This makes phonemes difficult to appreciate.

As much as 30% of the adult population, including teachers, fail to develop deep phonemic awareness.
Lindamood, P.C., Bell, N., & Lindamood, P. (1992). Issues in phonological awareness assessment. *Annals of Dyslexia, 42*, 242-259.

There is a pattern of less adequate literacy skills among students whose teachers had phonological deficiencies.
Lindamood, P.C. (1993). Issues in researching the link between phonological awareness, learning disabilities and spelling. In G. Reid Lyon (Ed), *Frames of reference for the assessment of learning disabilities. New views on measurement issues*. Maryland: Brooks Publishing.

The ability to isolate a phoneme from either the beginning or end of a word, the easiest of the phonemic awareness abilities also seems to be crucial to reading because nearly all children who could not adequately perform this task also had not achieved a pre-primer instructional level. p. 231.
Stahl, S. A. & Murray, B. A. (1994). Defining phonological awareness and its relationship to early reading. *Journal of Educational Psychology, 86,* 221-234.

When we gave this Auditory Analysis Test and other tests of phonemic awareness to a group of 15-year-olds in our Connecticut Longitudinal Study, the results were the same: even in high school students, phonological awareness was the best predictor of reading ability.
Shaywitz, S (No date). *Dyslexia.* [On-Line]. Available: http://www.sciam.com/1196issue/1196shaywitz.html

Among children identified as at-risk for later reading failure on the basis of poor letter naming in kindergarten, greater success in first grade reading was associated with a greater percent of classroom time devoted to phonemic awareness activities in kindergarten. p.32.
Mazzocco, M., Denckla, M., Singer, H., Scanlon, D., Vellutino, F., & Reiss, A. (1997). Neurogenic and neurodevelopmental pathways to learning disabilities. *Learning Disabilities: A Multidisciplinary Journal, 8,* 31-42.

With 15 minutes a day of direct instruction in phonological awareness activities, kindergartners can develop skills in phonological analysis at a faster rate than in a developmentally appropriate curriculum without this direct instruction. p.69.
Foorman, B., Francis, D., 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.

Research confirms that the most successful phonemic awareness training programs provide instruction on segmentation & blending (Blachman, 1987; Wallach & Wallach, 1977; Williams, 1979, 1980). p. 42.
Spector, J. (1995). Phonemic awareness training: Application of principles of direct instruction. *Reading and Writing Quarterly, 11*, 37-51.

Although there is evidence that segmentation & blending can be taught successfully as auditory skills (e.g., Elkonin 1973; Lundberg, 1977; Lundberg, Frost & Petersen, 1988), the phonemic awareness programs that have had the most positive effect on reading achievement have been those that incorporate segmentation & blending training with letter-sound instruction (e.g., Ball & Blachman, 1991; Blachman, 1987; Bradley & Bryant, 1983; Byrne & Fielding- Barnsley, 1989, 1991; Clay, 1979, 1985; Treiman & Barron, 1983; Wallach & Wallach, 1977; Williams, 1979, 1980).
Spector, J. (1995). Phonemic awareness training: Application of principles of direct instruction. *Reading and Writing Quarterly, 11,* 37-51.

Segmentation training helps develop blending skills. Yopp (1988) suggests that segmenting & blending tap similar constructs but agrees with Perfetti, Beck, Bell, & Hughes, (1987) that blending is a simple precursor to reading while segmenting is a more complex metacognitive linguistic skill. p. 221
Uhry, J.K., & Shepherd, M.J. (1993). Segmentation/spelling instruction as part of a first-grade reading program: Effects on several measures of reading. *Reading Research Quarterly, 28*, 219-233.

How might its development begin prior to school? At home:
- Nursery rhymes,
- Sesame St,
- Playschool,
- I Spy,
- Pig Latin (junk becomes unkjay),
- Spoonerisms - letters or syllables get swapped, sometimes in slips of the tongue (or tips of the slung)
- Tongue twisters (Bill and Betty baked brown bread for Barbara's baby),
- Palindromes (Do geese see God?)
- Magnetic fridge letters
- Learning music.

Big differences in experience

	Child A		Child B	
	Daily	Total at school entry	Daily	Total at school entry
Parent reading	1/2 hr	750 hrs	2 min	60 hrs
Sesame St / Playschool	1 hr	1500 hrs	2 min	60 hrs
Word games, magnetic letters, crayons, computers, etc.	1 hr	1500 hrs	2 min	60 hrs
	2 ½ hrs	3750 hrs	6 min	180 hrs

Adams, M. J. (1990)

It's not so easy for adults!
- Is there an /l/ in *talk*, in *palm,* in *salmon.*
- Think of the word *pink*. Now think of *pink* without the /k/. Do you hear *pin*?
- How many sounds can you hear in *sex* (the word, not the activity)?
- How many sounds can you hear in *pitch*?
- What is the 4th sound in the word *faxed*?
- What is the 3rd sound in *squabble*?
- How many sounds can you hear in *radio*?

Your knowledge of spelling gets in the way! To teach PA you need to regress.

Australian sample of 340 teachers (pre-service and in-service), only 54% knew what a syllable was and only 24% could correctly count the number of phonemes in a word (Fielding-Barnsley, in press).

Even many experienced teachers report insufficient training in spoken and written language structure. They struggle to teach it explicitly to either beginning readers or those with reading/spelling disabilities (Moats, 1994). Less adequate literacy skills among students whose teachers had phonological deficiencies (Lindamood, 1994).

Findings of the National Institute of Child Health and Human Development provided much of the inspiration for the National Reading Panel.

Lyon, G.R. (1999). The NICHD research program in reading development, reading disorders and reading instruction. Retrieved November 20, 2001 from http://www.ld.org/Research/keys99_nichd.cfm

Since 1965, the National Institute of Child Health and Human Development (NICHD), within the National Institutes of Health (NIH), has conducted and continuously supported research efforts to address three fundamental questions that must be answered if reading failure is to be understood and addressed successfully. These three questions are: (1) How do children learn to read? What are the critical environmental, experiential, cognitive, linguistic, genetic, neurobiological, and instructional conditions that foster reading development? (2) Why do some children and adults have difficulties learning to read? What specific cognitive, linguistic, environmental, and instructional factors impede the development of accurate and fluent reading skills, and what are the most significant risk factors that predispose youngsters to reading failure? (3) How can we help most children learn to read? Specifically, for which children are which teaching approaches and strategies most beneficial at which stages of reading development?

To answer these three questions, the NICHD has developed a research network consisting of **41 research sites** in North America, Europe, and Asia to study reading development, reading disorders and other learning disabilities, and reading instruction. During the past 33 years, NICHD scientists have studied the reading development of **34,501 children and adults**. Many studies have been devoted to understanding normal reading development, and **21,860 good readers** have participated in these investigations, many for **as long as 12 years**. Significant efforts have also been deployed to understand why many children do not learn to read. Within this context, **12,641 individuals with reading difficulties have been studied, many for as long as 12 years**. In addition, since 1985, the NICHD has initiated studies designed to develop **early identification methods** that can recognize those children during kindergarten and first-grade who are most at-risk for reading failure. These studies have provided the foundation for several longitudinal prevention and early intervention projects now underway at 11 sites in the U.S. and Canada. Since 1985, **7,669 children** (including 1,423 good readers) have participated in these reading prevention, early intervention, and remediation studies, and 3,600 children are currently enrolled in longitudinal intervention trials in Texas, Washington, DC, Georgia, Massachusetts, New York, Florida, Colorado, North Carolina, and the state of Washington. These studies involve the participation of 1,012 classroom teachers, working in 266 schools and 985 classrooms.

The purpose of this report (http://www.ld.org/Research/keys99_nichd.cfm) is to synthesize the major converging findings that have been obtained by NICHD scientists for each of the three questions that have guided the reading research program. This synthesis is derived from an analysis of over **2,500 publications generated by NICHD scientists since 1965.**

To appreciate fully the significance of the NICHD findings, it helps to understand the level of scientific rigour used to guide the formation of conclusions from the research. Reid Lyon coordinates the parallel investigation of similar questions across several centers. Under Lyon's leadership, the researchers determine that the questions have been answered only when the findings replicate across researchers and settings. Findings with a high degree of replicability are finally considered incontrovertible findings and then form the basis for additional research questions. Funding is awarded the research centers through a competitive peer review process. A panel of researchers who are not competing for the research funds award the funds after evaluating competing proposals according to specific criteria. Each research study within the NICHD network must follow the most rigorous scientific procedures. The average length of a study has been eight years, with a range of 3 years to 31 years. In the decades-long studies, the growth of children from preschool through adulthood has been evaluated. Currently, several large-scale, 5-year longitudinal treatment intervention studies are underway. This longer-term design allows evaluation of the effects of different instructional variables on later reading performance.

- The ability to read fluently for meaning depends primarily on rapid, automatic decoding and recognition at the level of the single word.
- The basis of the reading deficit (phonological processing) should provide the focus for intervention.
- Efforts should be directed at explicitly and systematically teaching the connection between these phonological rules and the written word.
- A phonics emphasis provides advantages for disabled readers over a Whole Language approach.
- There are almost as many girls as boys with reading difficulty.

More of the NICHD findings,
Most children do not "catch-up"
Children who fall behind in first grade reading have a one in eight chance of ever catching up to grade level, given the usual interventions. Of children reading disabled in Year 3, approximately 74% will still be so in Year 9. Reading failure has far-reaching consequences.

Research-supported components of effective reading instruction (USOE; NICHD)
- Create appreciation for the written word
- Develop awareness of printed language and the writing system
- Teach the alphabet
- Develop students' phonological awareness; develop phoneme awareness
- Teach the relation of sounds and letter
- Teach children how to sound out words

- Teach children how to spell words
- Help children develop fluent reflective reading

The importance of phoneme awareness to learning to read
- It is a foundation for learning an alphabetic writing system
- It is a predictor of reading problems
- It can result in fewer reading difficulties

What distinguishes a proficient reader?
- Ability to identify and manipulate the speech sounds in words at the phoneme level
- Ability to recognise a new printed word with very few exposures (1-4).
- Ability to link sound with symbol accurately
- Ability to process larger "chunks" of print
- Ability to recognise words with fluency (automaticity).
- Ability to focus on meaning because they are no longer "glued to print
- Ability to comprehend words, sentences

Phonology, reading and spelling: Known relationships
- Phoneme awareness predicts early reading and spelling proficiency (K-2).
- Phonological processing is independent of intelligence.
- Phonological skill is both inherited and learned.
- Children may not benefit from phonics instruction until they have rudimentary phoneme awareness.

The role of context in word recognition
- Poor readers over-rely on context because letter-sound knowledge is weak
- Context allows us to decode accurately only one word in ten overall.
- The content words in a passage tend to be less common, not in the sight vocabulary and must be decoded accurately
- Context alone can resolve ambiguity and sometimes supplies <u>meaning</u> for unfamiliar words.

Characteristics of poor and novice readers
- Over-reliance on context and guessing
- Limited phoneme awareness.
- Slow naming speed - lack of fluency in word recognition.
- Must devote attention to decoding process; limited attention available for meaning-making.

Facts about reading from scientific research about 3-cuing:
The most efficient way to make an "accurate first guess" of the identity of a new word is:
First, do phonemic analysis and try an approximate pronunciation. Then, close in on the exact right word by selecting a word with the right sounds in it, that also makes sense in the passage (Torgesen, 2003

At the secondary level in Victoria, we have about 20-30% of our students underprepared to cope with the literacy demands of a secondary curriculum.

Where should we direct our resources?

Isn't reading really about comprehension?
Why the heavy emphasis in the research on decoding words?
In 90% of cases, the source of reading comprehension problems is **poor word recognition skills** (Oakhill & Garnham, 1988).
Stuart, M. (1995). Prediction and qualitative assessment of five and six-year-old children's reading: A longitudinal study. *British Journal of Educational Psychology, 65*, 287-296.

Even among experienced readers individual differences in **comprehension of text reflect efficiency of phonological processing at the word level.**
Shankweiler, D., Lundquist, E., Dreyer, L. G., & Dickinson, C. C. (1996). Reading and spelling difficulties in high school students: Causes and consequences. *Reading and Writing: An Interdisciplinary Journal, 8,* 267-294.

Once **decoding skills are automatized,** growth in text comprehension follows**.**
Foorman, B., Francis, D., 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.

Differences in **reading comprehension** could be explained by differences in **phonological coding on non-words,** but not by differences in semantic word knowledge. p. 220
Elbro, C., Nielsen, I., & Petersen, D. K. (1994). Dyslexia in adults: Evidence for deficits in non-word reading and in the phonological representation of lexical items. *Annals of Dyslexia, 44*, 205-226.

Decoding problems account for the majority of cases of severe reading disability among students of otherwise average intellectual ability (see reviews by Stanovich, 1988; Vellutino & Denckla, 1991). p. 47
Spector, J. (1995). Phonemic awareness training: Application of principles of direct instruction. *Reading and Writing Quarterly, 11*, 37-51

To examine the relationship between word decoding and reading comprehension, Shankweiler et al. (1999) assembled 361 English-speaking children aged 7.5 to 9.5, of whom 168 had reading disabilities. They found the simple **ability to read aloud a list of English words accounted for 79% of the variance in reading comprehension** (r = .89, p < .0001). Even the ability to do the same thing with **non-words** (e.g., skirm, bant) correlated very highly with reading comprehension, accounting for **62% of the variance** (r = .79, p < .0001).
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.

In each grade, **skill in word recognition was more predictive of reading comprehension** than was listening comprehension.
Juel, C. (1993). The spelling-sound code in reading. In S. Yussen & M. Smith (Eds.), *Reading across the life span* (pp. 95-109). New York: Springer-Verlag.

Facility in decontextualised word identification is a basic prerequisite for extracting meaning from written text. ... performance on the **word identification measure was the best predictor of performance on the reading comprehension test.**
Vellutino, F. R., Scanlon, D. M., & Tanzman, M. S. (1994). Component of reading ability: issues and problems in operationalizing word identification, phonological coding, and orthographic coding. In G. R. Lyon (Ed.), *Frames of reference for the assessment of learning disabilities: New views on measurement issues*. Philadelphia: Brookes Publishing Co., pp. 279-332.

The groups receiving direct instruction in alphabetic code had significantly greater reading comprehension than the literature-emphasis groups. These results are not surprising, given the need for **decoding to be sufficiently automatic that memory and attention can be devoted to grasping the gist of the text.**
Foorman, B., Francis, D., & Fletcher, J. (1997, March 18). *Breaking the alphabetic code, A17*. The Globe and Mail.

"Research suggests that teaching children to read words quickly and accurately can also increase their reading comprehension (Tan & Nicholson, 1997). The theory behind fast and accurate word reading is that good readers are very good at reading words. They have over-learned this skill through much reading practice. As a result, like skilled musicians and athletes, they have developed automaticity, as a result of many hours of word reading practice. What this means is that they have **over-learned word reading skills to the point where they require**

little or no mental effort. As a result, they are able to put all their mental energies into reading for meaning."
G. B. Thompson & T. Nicholson (Eds.) (1998). *Learning to read: Beyond phonics and whole language*. New York: Teachers College Press.

"The scientific evidence is simply overwhelming **that letter-sound cues are more important in recognizing words than either semantic or syntactic cues."** (p. 16).
Pressley, M. (1998). Reading instruction that works: The case for balanced teaching. New York: Guilford.

The Panel also refers to phonics. So what do they mean by phonics?
Phonemic Awareness Ain't Phonics
Phonics means:
a) the relationship between sounds and their symbols,
b) the methods of instruction used to teach those relationships
c) the mental activity of using the sound-symbol relationship to "read through" a new word

Phoneme awareness is a necessary but not sufficient condition for learning to read an alphabetic writing system. Complicating the issue is the problem that English is not a transparent orthography: English and French are more complex than Italian. English has 1,120 ways of representing 40 sounds, whereas there are only 25 sounds in Italian and they are represented in 33 combinations of letters. The disorder is more common in the United States than in Italy.
In any language, dyslexia. (2001, 19 March). The Washington Post. [On-Line]. Available:
http://www.washingtonpost.com/ac2/wp-dyn/A23845-2001Mar18?language=printer

Isn't the English language too irregular for phonics to be of much help?
There are either phonics or spelling rules that govern about 75% of our language. However, if one relies only on the 44 phonics sounds without expanding one's knowledge to cover spelling rules, then 40% might be closer to accurate. After basic sound/symbol phonics teaching occurs, more advanced coding needs to be taught. The sound /ik/ will be spelled "ick" as in trick, thick, flick, sick, Rick, brick as long as it is a one syllable word. If it is at the end of the second syllable or more, it is spelled "ic" as in panic, magic, fantastic, Titanic, etc.

At least 80% of English spellings are regular or predictable.
Hanna, P.R., Hodges, R.E., & Hanna, J.S. (1971). Spelling: Structure and strategies. Boston: Houghton Mifflin.

Rules of limited regularity can be absorbed and utilized if the exceptional cases are presented explicitly and in close proximity to the generalization. Complex and abstract rules like the silent-e rule can be mastered with direct instruction and applied consistently to the decoding task.
Labov, L. (2003). When ordinary children fail to read. *Reading Research Quarterly, 38*, 128-131.

The implication for educators is that it is necessary to know which phonic patterns have high rates of usage, and focus on those phonic patterns. "English must be examined . . . as a complex system that is basically phonetic, but also relies on patterns and meaning to provide an optimal system" (Johnston 142).
Johnston, F.P. (2001). The utility of phonic generalizations: Let's take another look at Clymer's conclusions. *The Reading Teacher. 55*, 132-142.

Even the decoding of irregular words is assisted by phonic mediation because no English word is completely phonologically opaque (Tunmer et al., 1998).
Stacey, S., & Wheldall, K. (1999). Essential constituents of effective reading instruction for low progress readers. *Special Education Perspectives, 8*(1), 44-58.

Our writing system is an amalgam of Anglo-Saxon, Latin, and Greek, and to a lesser extent, includes spellings from French, German, Italian, and Spanish. Each of these languages contributed spelling conventions that within the language of origin were predictable but that violate the patterns of another. For example, *ch* is used to spell

/ch/ in Anglo-Saxon words such as *chair;* is used to spell /k/ in Greek-derived words such as *chorus;* and spells /sh/ in French-derived words such as *charade* and *Charlotte.*
Moats, L.C. (1998, Spring/Summer). Teaching decoding. *American Educator*, 1-9.

About 60 percent of the words in English running text are of Latin or Greek origin (Henry, 1997). Moats, L.C. (1998, Spring/Summer). Teaching decoding. *American Educator*, 1-9.

The most effective instructional programs teach children to read successfully with only 40 to 50 sound-spelling relationships. (Writing can require a few more, about 70 sound-spelling relationships.) The chart below is not taken from any particular program but represents the 48 most regular letter-phoneme relationships. (The given sounds for each of the letters and letter groups are either the most frequent sound or occur at least 75% of the time.) www.early-reading.com/home/research/research_04.html

The 48 most regular sound-letter relationships.
a as in fat, **g** as in goat, **v, m, l, e, t, h**, **u-e** as in use, **s, u, p, i** as in sit, **c** as in cat, **w** "woo" as in well, **f, b, j**, **a-e** as in cake, **n**, **I-e** as in pipe, **d, k, y** "yee" as in yuk, **r, o-e** as in pole, **z, ch** as in chip, **ou** as in cloud, **kn** as in know, **ea** as in beat, **oy** as in toy, **oa** as in boat, **ee** as in need, **ph** as in phone, **oi** as in boil, **er** as in fern, **qu** as in quick, **ai** as in maid, **ay** as in hay, **sh** as in shop, **ar** as in car, **igh** as in high, **th** as in thank, **au** as in haul, **ew** as in shrewd, **ir** as in first, **aw** as in lawn.

Phonics Ain't Phonics
Explicit (synthetic) phonics: Builds up from part to whole; implicit phonics breaks down from whole to part. If whole words are introduced before short vowel sounds, it's not a systematic phonics program.
Implicit (analytic) phonics: "The sound you want occurs in these words: mad, maple, moon" This implies students can compare the sounds in words, that is have already established phonemic awareness.
Synonyms for implicit (analytic) phonics: "systematic contextualized phonics" - "balanced" - "embedded phonics" - "integrated language arts" - "phonics in context" - "eclectic approach" - "onset-rime approach"

Analytic phonics:
•   The whole word is seen and children have their attention drawn to certain letters and their sounds
•   It is often taught after an initial sight vocabulary has been established, alongside reading-scheme books
•   It can take up to three years.

Synthetic phonics:
•   All of the letter sounds are taught very rapidly and the emphasis is on how words are built up
•   It generally starts before children are introduced either to whole words, or to reading-scheme books
•   It can be taught in a few months.
Watson, J.E., & Johnston, R.S. (1998). *Accelerating reading attainment: The effectiveness of synthetic phonics. Interchange, 57*, 1-12 Edinburgh: The Scottish Office. http://www.scotland.gov.uk/library/documents7/interchg.pdf

Phonics Instruction
Phonics instruction is a way of teaching reading that stresses the acquisition of letter-sound correspondences and their use in reading and spelling. The primary focus of phonics instruction is to help beginning readers understand how letters are linked to sounds (phonemes) to form letter-sound correspondences and spelling patterns and to help them learn how to apply this knowledge in their reading. Phonics instruction may be provided *systematically* or *incidentally*. The hallmark of a *systematic* phonics approach or program is that a *sequential* set of phonics elements is delineated and these elements are taught along a dimension of *explicitness* depending on the type of phonics method employed. Conversely, with *incidental* phonics instruction, the teacher does not follow a planned sequence of phonics elements to guide instruction but highlights particular elements opportunistically when they appear in text.
April 2000. Findings and Determinations of the **National Reading Panel**
http://www.nichd.nih.gov/publications/nrp/findings.htm

What's the problem with *Implicit* Phonics?
It proves less effective than explicit phonics, and especially so for at-risk students. While more able students can induce the phonic strategies needed, about 30-50% really need to have the relationships carefully explained, and provided with multiple opportunities for practice.

This example highlights the problems for those who never grasp the alphabetic nature of our written language. Betty Price, Director of Professional Reading Services reports that she was hired to tutor a chemist who was unable to discern the difference between *chlorpromamide* (which lowers blood sugar) and *chlorpromazine* (which is an antipsychotic)! They look similar if the initial letters are your primary cue, and you don't routinely attend to syllables.

In *Systematic* phonics instruction, the term *Systematic* is about the delivery rather than the content
There will be attention to the detail of the teaching process.
• teacher-directed,
• based on an analysis of the skills required and their sequence.
• massed and spaced practice of those skills (sometimes in isolation),
• corrective feedback of errors, and
• continuous evaluation of progress.

Incidental **phonics 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 grapho-phonic cues*, without the postulated disabling influence of systematic instruction.

Sadly, for struggling students such well-intentioned clues are neither explicit enough, nor are they likely to occur with sufficient frequency to have any beneficial impact. This approach is sometimes called embedded phonics because teachers are restricted to using only the opportunities for intra-word teaching provided within any given story.

Explicit phonics
In explicit phonics instruction, the sounds associated with the letters are identified in isolation and then "blended" together to form words. During a typical explicit phonics lesson, the children will be asked to produce the sounds of the letters that appear in isolation and in words. A critical step in explicit phonics instruction is blending the isolated sounds of letters to produce words. (1)

Systematic phonics
In systematic code instruction, decodable books are used that are aligned with the sound-symbol associations taught in the lesson. These books, created to make independent reading possible for a beginner, are a device to provide practice at reading words that have specific spelling patterns or letter-sound correspondences and to encourage sounding words out. (2)

Decodable Text
Decodable text is composed of words that use the sound-spelling correspondences the children have learned to that point and a limited number of sight words that have been systematically taught. As the children learn more sound-spelling correspondences, the texts become more sophisticated in meaning. (3)

"Research asserts that **most children benefit** from direct instruction in decoding, complemented by practice with simply written **decodable stories**. Further, for some children this sort of systematic approach is critical. Stories should 'fit' the child's reading level. Beginning readers should be able to read easily 90 percent or more of the words in a story".
Federal Academics 2000 (Public Law 103-227), "First Things First"

"Thus phonological training that is **integrated** with phonics training may be as effective as phonological training conducted separately from phonics training."

Hart, T. M., Berninger, V. M., & Abbott, R. D. (1997). Comparison of teaching single or multiple orthographic-phonological connections for word recognition and spelling: Implications for instructional consultation. *School Psychology Review, 26*(2), 279-297.

The National Reading Panel refers to fluency. What is reasonable fluency?

Meyer and Felton defined *fluency* as "'the ability to read connected text rapidly, smoothly, effortlessly, and automatically with little conscious attention to the mechanics of reading, such as decoding"
http://www.ldonline.org/ld_indepth/reading/reading_fluency.html

Most understand fluency to mean a high level of performance characteristic of "experts." Fluent performance involves high quality and high speed (Binder, 1996). We say that someone's performance is fluent when it occurs automatically and without hesitation, and when the quality and appropriateness is high.

Educators have taken these notions of fluency a step further. They have promoted and developed expert-level performance by providing learning opportunities that encourage progressively faster and more accurate performances (Binder, 1984; Haughton, 1972; Johnson & Layng, 1992); Kelly, 1995; Lindsley, 1992). While it seems clear that fluency training is not necessary to achieve high level performance, fast and accurate practice does achieve such outcomes.

Why Build Fluency?
Education and training programs based upon principles of learning have demonstrated the power of building fluency (Lindsley, 1971; Lindsley, 1972; Lindsley, 1990; Lindsley, 1992). For example, elementary school children showed achievement gains between 20 and 40 percentile over a three year period with the addition of just 30 minutes of daily fluency practice of core skills (Beck & Clement, 1991). Similar dramatic gains have been shown with children with learning difficulties, college students, and adults in a literacy program(Johnson & Layng, 1992, Johnson & Layng, 1994). The techniques have proven useful and transferable to the training of sales people as well (Binder & Bloom, 1989). Definitions & Technical Stuff
http://members.shaw.ca/celerationtechnologies/index.html

The National Reading Panel concluded that guided oral reading is important for developing reading fluency-the ability to read with efficiency and ease. In guided oral reading, students read out loud, to either a parent, teacher or other student, who corrects their mistakes and provides them with other feedback. Specifically, guided oral reading helped students across a wide range of grade levels to learn to recognize new words, helped them to read accurately and easily, and helped them to comprehend what they read.

By contrast, the panel was unable to determine from the research whether reading silently to oneself helped to improve reading fluency. Although it makes sense that silent reading would lead to improvements in fluency, and the panel members did not discourage the practice, sufficient research to conclusively prove this assumption has not been conducted. Literally hundreds of studies have shown that the best readers read silently to themselves more frequently than do poor readers, the panel members wrote. However, these studies cannot distinguish whether independent silent reading improves reading skills or that good readers simply prefer to read silently to themselves more than do poor readers. The panel recommended that if silent reading is used as a classroom technique, intended to develop reading skills and fluency, it should be done in combination with other types of reading instruction, such as guided oral reading.
Testimony of Duane Alexander, M.D. Director National Institute Of Child Health And Human Development before the Labor, Health and Human Services, and Education Subcommittee, Senate Appropriations Committee, United States Senate APRIL 13, 2000 http://www.nichd.nih.gov/about/dir_nrp.htm

Expected Reading Rates
First half of grade 1 = 45 words per minute
Second half of grade 1 = 60 wpm
First third of grade 2 = 75 words
Second third of grade 2 = 90 wpm

Last third of grade 2 = 110 wpm
First half of grade 3 = 120 wpm
Second half of grade 3 = 135 wpm
Fourth grade and higher = 150 wpm
Carnine, D., & Silbert, J. (1979). *Direct Instruction: Reading*. Columbus, OH: Merrill.

Early 1st = 35 words per minute
Late 1st = 50 wpm
Early 2nd = 70 wpm
Late 2nd = 100 wpm
Early 3rd = 120 wpm
Late 3rd = 140 wpm
From Howell, K.W. & Nolet, V. (2000). *Curriculum-based evaluation: Teaching and decision making*. Belmont, CA: Wadsworth/Thomson Learning.

CBM passages can be obtained from several sources, including:
www.readingprogress.com (18 alternate passages at each grade for grades 1-5);
dlspeece@wam.umd.edu (15 alternate passages at each grade for grades 1-4);
lynn.fuchs@vanderbilt.edu (30 alternate forms at each grade for grades 1-7);
http://dibels.uoregon.edu/ (DIBELS; 9 passages at each grade for grades 1-3)'
www.edformation.com (33 alternate passages at each grade for grades 2 - 8; 23 alternate passages for grade 1).

"Research suggests that teaching children to read words quickly and accurately can also increase their reading comprehension (Tan & Nicholson, 1997). The theory behind **fast and accurate word reading** is that good readers are very good at reading words. They have over-learned this skill through much reading practice. As a result, like skilled musicians and athletes, they have developed automaticity, as a result of many hours of word reading practice. What this means is that they have over-learned word reading skills to the point where they require little or no mental effort. As a result, they are able to put all their mental energies into reading for meaning."
G. B. Thompson & T. Nicholson (Eds.) (1998). *Learning to read: Beyond phonics and whole language.* New York: Teachers College Press.

The average reading rate (when reading grade level material) of **fifth graders** referred for reading assistance is about **60 words per minute** compared to the average rate of above **150 wpm**.
Rasinski, T.V. (2000, Oct). Speed does matter in reading. *The Reading Teacher, 54*, 146-151.

Free test: DIBELS
The ability to read aloud accurately, rapidly, expressively and with understanding. Very high (> .85) correlations between oral reading rate and reading comprehension. The faster you can produce it. The stronger the association, thus the better you know it. When you know it to automaticity, you don't use your conscious mind to do it. This frees up resources for other tasks like comprehension.

Fuchs, Fuchs, Hosp, and Jenkins (2001) reported evidence that a very brief measure of oral reading fluency was a better predictor of performance on a reading comprehension outcome measure than was a brief measure of reading comprehension itself. In this study, with middle and junior high school students with reading disabilities, the correlation between oral reading fluency and the reading comprehension measure was a nearly perfect .91.

More recently, researchers comparing third graders' performance on the Dynamic Indicators of Basic Early Literacy Skills measure of Oral Reading Fluency to their scores on state assessments of reading comprehension have found correlations of .70 with the Florida Comprehensive Assessment Test (Buck and Torgesen, 2003) and .73 with the North Carolina end-of-grade assessment (Barger, 2003).

Students in 3rd grade at or above 110 wcpm are at low risk of reading below grade level (9%) on the state reading comprehension test (FCAT). Students scoring below 80 wcpm are at high risk
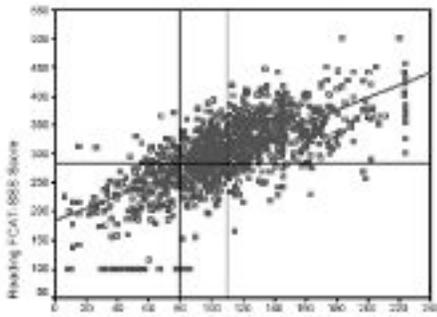
<u>Dynamic Indicators of Basic Early Literacy Skills (DIBELS)</u>
•   Oral Reading Fluency - Mid First Grade to end of Third Grade
•   Retell Fluency - Mid First Grade to end of Third Grade
•   Nonsense Word Fluency - Mid prep to end of First Grade
•   Phoneme Segmentation Fluency - Mid prep to end of First Grade
•   Letter Naming Fluency - Begin Preschool to mid Prep
•   Initial Sound Fluency - Begin Preschool to late Prep
•   Word Use Fluency - Begin Preschool to end Third Grade

What about the National Reading Panel's interest in vocabulary?

The average number of new words taught directly in a year - about 300 to 500. The average number of new words learned in a year - about 3,000 to 4,000.
Osborn, J.H. & Armbruster, B.B. (2001). Vocabulary acquisition: Direct teaching and indirect learning. *Basic Education Online Edition, 46*(3). [On-Line]. Available: http://www.c-b-e.org/be/iss0111/a2osborn.htm

Beginning in about the third grade, the major determinant of vocabulary growth is the amount of free reading.
Nagy, W., & Anderson, R. (1984). How many words are there in printed school English? *Reading Research Quarterly, 19*, 304-330.

Extensive independent reading is the primary means for increasing vocabulary knowledge (Nagy, 1998). Students who read more learn more about words and their meanings. Although direct, explicit teaching of word meanings is effective and important, it cannot produce the needed growth in students' vocabulary knowledge that should occur in the fourth grade.
Nagy, W. (1998). Increasing students' reading vocabularies. Presentation at the Commissioner's Reading Day Conference, Austin, Texas.

According to the National Reading Panel (2000), estimates of students' vocabulary size indicate that most of a student's vocabulary is learned in contexts other than formal learning, especially through independent reading.
Osborn, J.H. & Armbruster, B.B. (2001). Vocabulary acquisition: Direct teaching and indirect learning. *Basic Education Online Edition, 46*(3) http://www.c-b-e.org/be/iss0111/a2osborn.htm

(In this study) children at the 10th percentile of reading ability in the fifth grade sample read about 50,000 words per year out of school. The comparable figure at the 90th percentile was 4,500,000 words.
Fielding, L., Wilson, P., and Anderson, R. (1986). A new focus on free reading: The role of trade books in reading instruction. In T. Raphael & R. Reynolds (Eds.), *Contexts of literacy* (pp.149-160). NY: Longman

Children had on average acquired about 5,200 root words in their vocabulary by the end of grade 2 and an average 3,200 additional root words in grades 3-5 and that advantaged children had acquired 6,200 root words by the end of grade 2 and an additional 2,500 thereafter. Thus, large differences in root word vocabulary had occurred by grade 2.

Biemiller, A., & Slonim, N. (2001). Estimating root word vocabulary growth in normative and advantaged populations: evidence for a common sequence of vocabulary acquisition. Journal of Educational Psychology, 93, 498-520.

Print exposure appears to compensate for modest levels of general cognitive abilities .... low ability need not necessarily hamper the development of vocabulary and verbal knowledge as long as the individual is exposed to a lot of print. p.162

Stanovich, K.E. (1993). Does reading make you smarter? Literacy and the development of verbal intelligence. *Advances in Child Development and Behaviour, 24*, 133-180.

By the end of first grade, the good readers in our study had seen approximately 18681 words in running text in their basal readers. The poor readers, however, had seen only about half as many – 9975. … by at least the end of second grade (it) is further compounded by differences in the amount of time spent reading outside of school (Juel, 1988).

Juel, C. (1993). The spelling-sound code in reading. In S. Yussen & M. Smith (Eds.), *Reading across the life span* (pp. 95-109). New York: Springer-Verlag.

New words are learned mainly through reading. Children's books contain 50% more "rare" words (outside the vocabulary of 9-12 yr olds) than do adult prime time television, or the conversation of college graduates. Popular magazines have roughly three times as many opportunities for new word learning as prime-time television and adult conversation.

Stanovich, K.E. (1993). Does reading make you smarter? Literacy and the development of verbal intelligence. *Advances in Child Development and Behaviour, 24*, 133-180.

Only above average readers gained significantly in incidental (vocabulary) learning. Reading stories to children will only increase the vocabulary of above average readers.

Nicholson, T., & Whyte, B. (19XX). Matthew effect in learning new words while listening to stories. In *Literacy research: Theory and practice.*

What about dyslexia?

Definition vary from one that includes all unsuccessful readers, perhaps 30% of students – to one that asserts a specific deficit – either phonological, visual or auditory with a prevalence of about 5%).

Other hypotheses exist concerning the neurological origin of dyslexia, in particular related to alternative cognitive theories (auditory, visual). The most notable of those, the "magnocellular theory" (Stein, 2001), hypothesizes that magno-cells in all sensory pathways are deficient, leading both to visual disorders causing reading difficulties, and to auditory disorders causing the phonological deficit. Beyond the criticism already mentioned concerning the prevalence and the causal role of those sensory deficits, the magnocellular theory also faces more specific challenges. In particular, it predicts that dyslexics' sensory deficits will be observed for stimuli in a certain range of spatial and temporal frequencies characteristic of the response domain of magnocells. In the auditory domain, this translates into the hypothesis of a "rapid auditory processing" deficit proposed by Tallal (1980). The empirical evidence is highly contradictory, split between findings consistent and inconsistent with the theory (see reviews in Ramus, 2003; Rosen, in press; Skottun, 2000). Overall the magnocellular theory in its present state does not seem to be able to adequately characterize the sensory deficits of even the fraction of dyslexics that are so impaired.

Overall, there is overwhelming evidence that for the vast majority of children with dyslexia, a specific deficit of the phonological system is the main culprit (see reviews in Ramus, 2003; Rosen, in press).

Ramus, F. (in press) The neural basis of reading acquisition. In M. S. Gazzaniga (Ed.), *The new cognitive neurosciences* (3rd ed.). Cambridge, MA: MIT Press.

True dyslexics appear to be resistant to simple phonological awareness development, probably inherit the condition, and require intensive and early phonological interventions if they are to develop adequate reading and writing skills. The condition is not an intelligence issue.

Some adult examples
Dear Kerry,
Thank you very much for such an informative site. I found the site very interesting and could identify with it allot.

I'm in my early 30ies and think I suffer from word blindness or some form of dislexia. My partner explain what word blindness was last week and I could Identified with it. (Hense I looked for 'word blind' on the internet and found your site) All my life I've had hugh reading, spelling and pronouncation problems and was alway in special classes at school that did'nt seem to help. To me it's like I never learnt the fundamentals of reading and spelling. To alot of people it's not obveless.

I find that these problems cause me stress and anzigalely (anziate) I was caught out last week by my boss when he came over and started dictating a message he wanted me to send. He was amazed that I could not spell or work out was wrong with a word. I was so imbarassed and didn't know what to do.

A few years ago I was tested and my spelling was at the age of a 11 year old, I think my reading age was about the same. I have various problems all my life like :

- Unable to work out how to spell a word if someone says it. (or I say it myself) Generally for me I have no idea where to start and I dont know what letters make up different sounds.

- If I'm reading a word and I dont know what the word is I will have a go at trying to pronounce it, but generally its completely wrong as I dont have the understanding on how words are put together, I cant breakdown words into silabiles.

- Unable to pronounce words and I cant say my r's. I think I also have lazy speech as well. Quit often people will think I have said a completly different word than I have said. Ie Saving Prairie but everyone thinks Ive said Ferry. I also have difficultly sounding some words correctly.

- I have the worst hand writing you have ever seen. I was fasinated to read on your site that this was a common problem with people who cant spell. I think I probably do this to discuise the fact that I cant spell.

- I'm am not very good at proof reading my work and constancely have the wrong word in a document or email.

- Poor volcabulary and general knowledge. Generally I dont read many books and my reading speed it slower than most.

I have a twin sister with the same problems and believe that my problem is hereaditary. Both my parents had poor spellers/reading skills as well.

I've said to my partner that I really want to try to overcome my problems and he has ofterned to help me (he is very literate and said he would be really happy to help me) but I really feel I need specialised help so that I can re-learn the basics. I know that at my age it is going to take allot of work and help for me to overcome my problems.   Can you please direct me to someone or an agency in Sydney that could help or would be willing to work with me. Any comments or suggestions you could offer would be a great help as well.
Thanks & Regards, Meg

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, W.T. (1997). We can't focus just on ages zero to three. *APA Monitor, 28,* 19.

"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, M. J. (1990). *Beginning to read: Thinking & learning about print*. Cambridge, M.A: MIT Press.

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, J., & Frank, A. (1993). Engagement and performance feedback: Enhancing the classroom achievement of students with mild mental disabilities. In R. Gable & S. Warren (Eds), *Advances in mental retardation and developmental disabilities: Strategies for teaching students with mild to severe mental retardation.*

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). p. 24
Blanton, L.P., & Blanton, W.E. (1994). Providing reading instruction to mildly disabled students: Research into practice. In K.D. Wood & B. Algozzine (Eds.), <u>Teaching reading to high-risk learners: A unified perspective</u>. MA: Allyn & Bacon.

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, T. & Mastropieri, (1993). Teaching students with mild mental retardation. In R. Gable & S. Warren, *Advances in mental retardation and developmental disabilities.* Vol.5. Philadelphia: Jessica Kingsley.

Now, what about <u>older</u> students? Do we have to include those 5 National Reading Panel themes?
It is not entirely clear what implications the phonemic awareness research has for older children and adults who struggle with reading. It may be that there is a level of phonemic awareness (O'Connor, Notary-Syverson, & Vadasy, 1996) beyond which there is no advantage for reading development in attempting its enhancement. Indeed, it is possible that for older children phonemic awareness is no longer the appropriate focus, as students may be more in need of orthographic (whole word) rather than phonemic strategies. Not so, asserts Share (1995). He argues that without the induction of the alphabetic principle, skilled reading (implying the use of a generative strategy capable of decoding novel words) will not occur. His view is supported by the finding that dyslexic adult readers (even those with strong compensatory orthographic capacities) continue to demonstrate phonemic awareness deficits, and struggle to decode novel words (Bruck, 1992; Hulme & Snowling, 1992; Pratt & Brady, 1988; Siegel, 1993; Solman & Stanovich, 1992).

When considering older students and adults, since the task remains the same, **the techniques proved most successful for young students have an a priori advantage over other alternatives in the absence of contrary evidence**. There has been some reported work with older children, adolescents and adults. Elbro, Neilsen and Petersen (1994) argued for emphasis upon the alphabetic principle because of the memory constraints imposed by training in whole word recognition:

In many cases, compensated dyslexic adults reported that they believed that they had completely overcome their reading difficulties, but when asked to read novel words they hesitated and admitted that this was difficult for them. These results underline the validity of a positive definition of dyslexia that is based on poor mastery of the phonemic principle of written language. (Siegel, 1988; Stanovich, 1991; Rack, Snowling, & Olsen, 1992; Stanovich & Siegel, 1992). (p.220).

A number of similar studies involving adults with reading difficulties have revealed marked deficits in decoding (Bear, Truax, & Barone, 1989; Bruck, 1990, 1992, 1993; Byrne & Letz, 1983; Perin, 1983; Pratt & Brady, 1988; Read & Ruyter, 1985; cited in Greenberg, Ehri, & Perin, 1997). In the Greenberg et al. (1997) study the adults' performance on phonologically-based tasks resembled those of children below 3rd grade. The findings were also consistent with those of Bruck (1992), Byrne & Letz (1983), Fawcett & Nicholson (1995), Pennington, Van

Orden, Smith, Green, and Haith (1990), and Pratt and Brady (1988). Even very bright well-compensated adult readers acknowledge that they have had to laboriously remember word shapes, have little or no idea how to spell, and are constantly struggling with new words, especially technical terms related to their occupations. These are classic symptoms of the need for a strong phonics emphasis in the instructional process; indeed, some have argued (Greenberg et al., 1997) that it is most likely the failure of the school system to address the phonological nature of the reading problem that precluded satisfactory progress for these individuals.

The critical variable is not age but stage - whether child or adult - the path to facile reading is similar. Certainly adults have a history that cannot be ignored - most relevant is the likelihood of unproductive habits strongly engraved by years of practice. Adults need to unlearn in addition to learning. The implication is that this may entail slower progress, with the requirement of (possibly) vast amounts of practice accompanied by feedback to ensure the new habits are used effectively. On the positive side is that adults are usually vastly **more experienced with language in general**, and when their decoding difficulties are relieved their comprehension of what they read improves much more rapidly than it does for most young children.

Phonics is the starting motor for an engine subsequently fuelled by confidence and enjoyment. Some starting motors turn sluggishly and demand a significant load from the battery (parents and teacher). If the battery fails, the journey may never begin. However, all phonics are not equal. It is possible to teach phonics carefully and with parsimony; it is possible to do so ineffectively and excessively; and it is possible to do it in name only. Questions such as "What/When/How much phonics?" continue to be examined, but not the question "Should we teach phonics?", for it has been answered resoundingly in the affirmative.

Older students: Why are so many struggling students not noticed until about Year Four and beyond?
At about Year Four, there is a marked increase in the number of children referred for reading assistance (Chall, Jacobs, & Baldwin, 1990). This may represents the dawning of teachers' recognition that the maturational delay hypothesis can no longer be used to explain the lack of reading progress. More salient perhaps is the generally unacknowledged explosion of new words in textbooks at about that time (Carnine, 1982) and of the increased complexity of the words in those texts (Henry, 1991). Many students who have relied upon whole-word memory recognition as their mode for storage and retrieval find the strategy collapses in Year Four. Whereas a word recognition capacity of 400 words is adequate for coping with text up to this time (and many children's visual memory can manage such a load), the demand increases dramatically to about 4000 words around that year, and up to 7000 words by Year Six (Carnine, 1982), what Share (1995) describes as an "orthographic avalanche"(p.17).

For the student who relies primarily on word shape, the task is similar to that required in visually memorizing 7000 telephone numbers. In those languages that do rely on images rather than an alphabet for their construction, the number of words that are typically employed in print is far less than in English. For example, Chinese adults are said to have a working familiarity with only about 4000-5000 (Adams, 1990). Students who cannot access the phonological route to identify the escalating array of new words obviously struggle, and progress grinds to a halt. In truth, they had difficulties before this time, but perhaps managed to disguise them in classrooms where careful continuous assessment of word attack skills was unavailable. Unfortunately, this under-identification appears to be even more likely for girls, as their rate of referral for assistance (about 1 in every 4 referrals) does not match the prevalence (about equal with males) of reading problems among females in our society (Alexander, Gray, & Lyon, 1993).

A low *Woodcock:* Word Attack (nonsense word) score suggests this scenario in students at (or beyond) Year Four. For younger students it is predictive of their reading future. Inability to decode pseudo-words is indicative of the need for an intensive, carefully designed program that provides at least a reasonable opportunity for the accelerated progress needed if a student is to make headway against his peers. If a student is two years behind his peers he must develop in reading at a rate twice as fast as they do, if he is to catch them by the end of primary school (as they will improve by at least two years over that period). While this conception of reading progress is rather crude it does give the flavour of just how immense a task it is. It also helps explain the chilling finding from a Melbourne University study (Hill, 1995), that for most students in this position there is no discernible improvement in reading between Year Four and Year Ten. Most students do not have access to intervention, and

their prognosis is grim. For those students who do receive help it is incumbent upon us to provide the best and most efficient intervention available at the time. This implies that the most salient content must be delivered to students in the most effective manner possible.

In a study of 3000 Australian students, 30% of 9 year olds still hadn't mastered letter sounds, arguably the most basic phonic skill. A similar proportion of children entering high school continue to display confusion between names and sounds. Over 72% of children entering high school were unable to read phonetically regular 3 and 4 syllabic words. Contrast with official figures: In 2001 the Australian public was assured that 'only' about 19% of grade 3 (age 9) children failed to meet the national standards.
Harrison, B. (2002, April). Do we have a literacy crisis? *Reading Reform Foundation Newsletter, 48*. [On-Line]. Available: http://www.rrf.org.uk/do%20we%20have%20a%20literacy%20crisis.htm

Students from the 10th and 90th percentiles differ by grade equivalents equal to their grade (i.e., 6 grade range at the end of 6th grade). (Biemiller, personal communication, August 1, 2002) Professor Andrew Biemiller, Institute of Child Study, University of Toronto.

"Learning to read is not just one of the goals of schooling. It is essential if students are to succeed in any grade, in any subject. According to the National Reading Panel, only about 5% of children learn to read effortlessly. About 60% find early reading difficult, and of that number, 20-30% really struggle. By fourth grade, the seriousness of the problem for these children becomes obvious" p.34.
Lewis, L. & Paik, S. (2001). *Add it up: Using research to improve education for low-income and minority students*. Washington: Poverty & Race Research Action Council. http://www.prrac.org/additup.pdf

Other research on <u>older</u> students:
Studies involving adults with reading difficulties have revealed marked **deficits in decoding** (Bear, Truax, & Barone, 1989; Bruck, 1990, 1992, 1993; Byrne & Letz, 1983; Perin, 1983; Pratt & Brady, 1988; Read & Ruyter, 1985; cited in Greenberg, Ehri, & Perin, 1997).

The adults' performance on **phonologically-based tasks** was worse than that reading-level matched young children, resembling those of children **below 3rd grade**. These findings are also consistent with those of Bruck (1992), Byrne & Letz (1983), Fawcett & Nicholson (1995), Penington, Van Orden, Smith, Green, and Haith (1990), and Pratt and Brady (1988). … they may not have received adequate instruction in decoding and spelling to remediate the phonological deficits. p.272
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.

When we gave this (Auditory Analysis Test) and other tests of phonemic awareness to a group of 15-year-olds in our Connecticut Longitudinal Study, the results were the same: **even in high school students, phonological awareness was the best predictor of reading ability.**
Shaywitz, S (No date). *Dyslexia.* [On-Line]. Available: http://www.sciam.com/1196issue/1196shaywitz.html

Most children who become poor readers experience early and continuing difficulties in learning how to accurately identify printed words. This difficulty is expressed most directly on two kinds of reading tasks. First, children destined to be poor readers at the end of elementary school almost invariably have difficulties understanding and applying the alphabetic principle in deciphering unfamiliar words. These children have unusual difficulties learning to use the regular patterns of correspondence between letters and sounds in words as an aid in identifying new words they encounter in text (Siegel, 1989). They have trouble "sounding out" unknown words. Second, poor readers at all grade levels are characterized by slower than normal development of a "sight vocabulary" of words they can read fluently and automatically. Ultimately, it is this difficulty in rapid word recognition that limits comprehension in older poor readers, for these skills allow children to focus on constructing the meaning of what they are reading rather than spending too many of their intellectual resources on trying to identify the words (Adams, 1990). The strongest current theories of reading growth link phonetic and "sight word" reading skills together by showing how good phonetic reading skills are necessary in the formation

of accurate memory for the spelling patterns that are the basis of sight word recognition (Ehri, in press; Share & Stanovich, 1995).
Torgesen, J.K. (1998, Spring/Summer). Catch them before they fall: Identification and assessment to prevent reading failure in young children. *American Educator*
http://www.ldonline.org/ld_indepth/reading/torgeson_catchthem.html

Even successful schools will have some students who do not do well in reading and writing. On average, 20% of students entering high school will be reading below what we would expect students to be able to read at that age. About half of these students (10%) will be three years below average for their age in reading. Flockton, L., & Crooks, T. (1997). *Reading and speaking assessment results 1996.* Wellington: Ministry of Education.

" … the reality for many years has been that high school subject teachers have resisted teaching reading"
Vacca, R. T. (1998). Let's not marginalize adolescent literacy. *Journal of Adolescent and Adult Literacy, 4*, 604-609.

There is a strong correlation between ability to read and mathematics achievement (Tseng, 1998).
Tseng, S.M. (1998). *Reading comprehension and motivation: A comparison of Taiwanese and English-speaking secondary school students*. Unpublished master's thesis, The University of Auckland

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).
Bruck, M. (1998). Outcomes of adults with childhood histories of dyslexia. In C. Hulme & R. M. Joshi (Eds.), *Reading and spelling: Development and disorders* (pp. 179-200). Mahwah, NJ: Erlbaum.

Best results are achieved by providing instruction **every day**, rather than scheduling days between sessions.
Horowitz, J. (2000). Teaching older nonreaders how to read *The Reading Teacher, 54*, 24-26.

The difficulty of breaking **old habits** adds to the older poor reader's challenge.
Greenberg, D., Fredrick, L.D., Hughes. T.A., & Bunting, C.J. (2002). Implementation issues in a reading program for low reading adults. *Journal of Adolescent & Adult Literacy, 45*(7), 626-632.

Effective instruction for older students
Several principles drive effective instruction in reading and language. Such instruction is intensive enough to close the ever-widening gap between poor readers and their grade-level peers as quickly as possible. Reading intervention grounded in research imparts to older readers the skills they missed in primary grades and can bring them to grade level in one to two years (Torgesen, Wagner, Rashotte, Alexander & Conway, 1997; Torgesen et al., in press). The intervention must match the students' level of reading development, because each stage of growth requires a special focus (Curtis & Longo, 1999).

Very poor readers must have their **phonological skills strengthened** because the inability to identify speech sounds erodes spelling, word recognition, and vocabulary development. For less severely impaired readers, educators must often target text **reading fluency**. If students can decipher words, educators must aggressively address **vocabulary deficiencies** with direct teaching and incentives to read challenging material in and out of school. If students do not know the words they are reading and cannot derive meaning from context, they must expand their vocabularies and learn a repertoire of **comprehension strategies** (Williams, 1998). Students cannot and should not bypass any critical skills necessary for fluent and meaningful reading just because of their chronological age.
Moats, L.C. (2000). *Speech to print: Language essentials for teachers.* Baltimore: Paul Brookes Publishing.
 http://www.cdl.org/resources/reading_room/print/older_read.html

Is it enough to schedule a reading class?
In fact NICHD just held an institute in which they featured 4 promising approaches. Bonnie Grossen's Beacon Schools approach was one of them. Cathy Bardo, the original principal from the famous Goethe Middle School

project was the presenter in Washington DC. She knows exactly what it takes to turn a bottom-of-the-barrel middle school around academically, behaviourally, socially. She has done it with the assistance of Bonnie and her model.

I think the public needs to know that it isn't easy and it takes "intensive, systematic, long-term intervention". This isn't something you can fix easily -with just a class or two in Corrective Reading. Students need first to become proficient in reading accurately and fluently. This can be done with the decoding track in SRA-McGraw Hills Corrective Reading program. Then they need vocabulary and thinking skill instruction with combinations of the comprehension track of Corrective Reading and the upper levels of the Reasoning and Writing program (Levels D - F).

If they are low in math as well, they need to be placed in the upper levels of the Connecting Math Concepts program (Bridges - Level F). They have to have the writing instruction with Expressive Writing and the upper levels of the Reasoning and Writing programs. They also usually need instruction in the Spelling Mastery program. This requires at least three periods daily - not an easy pill to swallow for middles schools with their complex offerings of courses. Most of the scheduling is a nightmare and requires complete commitment to turning the school around. But it can be done and there are a number of excellent implementations.

Some of these students can't seem to do anything!
Binder (1996) describes as *cumulative dysfluency* the gradual loss of contact with the curriculum that eventuates when students' basic skill deficits are left unnoticed, unaddressed, or unaffected by attempts at resolution. As complexity increases in secondary subjects such as the science and history domains, some students reach a ceiling - the requisite advanced abilities in reading comprehension, communication and reasoning failing to develop in concert with the demands. Lewis and Paik (2001) make a similar observation that adequate development of basic skills is essential if students are to find success at whatever the grade and school subject. Problems in basic educational skills, commencing early in an individual's life, have snowballing negative effects, and the consequences are felt over a lifetime and in numerous domains of the individual's life. Such students often enter their secondary years disheartened, and well below grade level. They are a frequent source of discipline problems, and highly likely to drop out of school (Montgomery & Rossi, 1994).

How consistent is the prevailing view on literacy in Victorian education with these worldwide research findings

"The Curriculum and Standards Framework (CSF11) provides a strong focus for teaching and learning (i.e., the curriculum) and the standards expected of successful learners. The result is a framework that achieves comparability with the highest Australian and international standards. The English key learning area is organised in three strands: Speaking and listening – Reading – Writing". http://www.bos.vic.edu.au/csf/csfcd/home.htm

Note in Curriculum and Standards Framework**:**
* The term *phonemic awareness* is absent from the CSF document.
* *Phonics* is mentioned once, and only in relation to teaching writing.
* The terms *explicit, synthetic* and *systematic* do not appear.
* The term *fluency* is absent from the document

"When your child is reading a book, use the 3 P's: Pause, Prompt and Praise. Pause if your child is unsure; wait a moment. Let your child look at the pictures and words to work out the meaning. Give a prompt or cue to encourage them to look more closely and have a go. Ask a question such as: What word might make sense? What would sound right? What does it start with? Praise all efforts. If your child is still unsure after trying, tell them the word so they don't lose the meaning of the story" p.3.
Department of Education, Employment and Training. In The Age, August 29, 2001, Literacy Week Supplement,

Data from the Victorian Multi-age Project
Of 272 Victorian teachers (P-2), 77 % relied on whole language, and 6% followed a structured program. 51% had no specific teaching of phonics in their program, 22 per cent indicated that they included teaching of

phonics as and when necessary (implicit phonics), while 27 per cent of teachers indicated that they included systematic teaching of phonics as a part of their teaching program.

de Lemos, M. (2002). *Closing the gap between research and practice: Foundations for the acquisition of literacy*. Camberwell: Australian Council for Educational Research

Some quotes from a parent home reading information sheet:
X Park Primary School.
• "It is inappropriate for your child to be directed to 'sound-out' words, using individual letter sounds, as many words cannot be identified in this manner."
• "When a child gets stuck ask him to have a guess, or look at the picture, add a word that makes sense. Does it 'look right'"?
• "If a mistake makes sense it doesn't necessarily need to be corrected"

X Hill PS 2002 "Teaching your child reading strategies".
If your child has difficulty with a word:
• Ask your child to look for clues in the pictures
• Ask your child to read on or reread the passage and try to fit in a word that makes sense.
• Ask your child to look at the first letter to help guess what the word might be.

Establishing effective secondary school-based literacy interventions for students at-risk
What are the challenges?

There are 5 themes from the National Reading Panel (phonemic awareness, phonics, fluency, vocabulary, reading comprehension strategies)
How much of each should go into our mix?
How should the themes best be integrated?
How should we decide on our method of teaching?
How often need we schedule this assistance?
How do we select our students?
Who should take the groups?
What group size?
What hurdles might we meet?
What issues of motivation, cooperation, school priorities?
For how long need this intervention last?
How can we measure progress?
Do we need to design our own program or are there good programs we can use?

A noticeable shift from fads to evidence

Direct Instruction programs have been acknowledged as having the research base required under the recent USA *Reading First Act*, 2001.

Manzo, K.K. & Robelen, E.W. (2002). States unclear on ESEA rules about reading. *Editorial Projects in Education, 21*, 1, 26.

For Direct Instruction there were 49 studies with 182 outcomes. DI had the largest effect size of the three models included in the group displaying the Strongest Evidence of Effectiveness. It is a model that is clearly established across varying contexts and varying study designs; its effects are relatively robust and the model can be expected to improve students' test scores. The model certainly deserves continued dissemination and federal support

Borman, G.D., Hewes, G.M., Overman, L.T., Brown, S. (2002). *Comprehensive school reform and student achievement: A meta-analysis*. Report No. 59. Center for Research on the Education of Students Placed At Risk, U.S. Department of Education. Retrieved 28/3/03 from**:**
http://www.csos.jhu.edu./crespar/techReports/report59.pdf

Marilyn Jager Adams, author of the major text on reading: "Beginning to read: Thinking and learning about print" commented on Direct Instruction thus: "The research is irrefutable."

An Educators' Guide to School-wide Reform, a 141-page report from American Institutes for Research, found that only the programs **Direct Instruction**, **High Schools That Work**, and **Success for All** had adequate evidence for effectiveness in reading instruction. Commissioned by five education groups-including the National Education Association and the American Federation of Teachers
The report is also available on the World Wide Web at
http://www.aasa.org/issues_and_insights/district_organization/Reform/Approach/direct.htm

The development of criteria for what constitutes acceptable research evidence has made easier the task of convincing the educational community of the value of research findings in informing practice. Having established these criteria, it becomes easier to determine which of the plethora of reading programs available does have adequate research support at any given time. The examination of existing evidence employing stringent criteria by a range of groups has supported Direct Instruction as a valuable approach to reading instruction for both regular and struggling readers. For example, the **American Federation of Teachers** series of documents *Building From The Best, Learning From What Works* names **Direct Instruction** programs among their recommendations to schools, as published in: *Seven Promising Reading and English Language Arts Programs, Three Promising High School Remedial Reading Programs,* and *Five Promising Remedial Reading Intervention Programs.*

Direct Instruction programs are the only interventions recommended in each of these reports. See at:
http://www.aft.org/edissues/Reading/Resources.htm

The Council for Exceptional Children provides informed judgements regarding professional practices in the field. The **Direct Instruction model** was judged by the Editorial Committee to be well validated and reliably used. Read about it at: http://dldcec.org/ld_resources/alerts/#direct

A report from the Thomas B. Fordham Foundation supports the Direct Instruction model as a viable approach to schoolwide reform. "DI has, in fact, never caught on widely despite consistent proof of effectiveness".
Traub, J. (1999). *Better by design: A consumers' guide to schoolwide reform*. The Thomas B. Fordham Foundation. [On Line]. Available: http://www.edexcellence.net/library/bbd/better_by_design.html

Another report, *Reading Programs that Work: A Review of Programs for Pre-Kindergarten to 4th Grade* (Schacter, 1999)*,* similarly includes **Direct Instruction** among six school-wide effective reading models. These reports have been influential in drawing attention to the large corpus of supportive research developed over the years indicative of the effectiveness of the Direct Instruction model across a wide range of educational settings.
http://www.mff.org/pubterms.taf?file=http://www.mff.org/pubs/ME279.pdf

The model is now being implemented with varying degrees of fidelity in increasing numbers of school settings. In the USA, this interest has been furthered by the impact of the Reading Excellence Act (1998) and the Elimination of Reading Deficit Act (2000) with their emphasis on empirically supported programs as a requirement for federal funding. As a consequence, there has been a very rapid rise in interest within the educational community. As an indication, the number of educational web pages that now make reference to Direct Instruction has increased dramatically in the past 18 months as the use of any search engine will attest. Adams & Englemann' meta-analysis resulted in an **effect size of .68** for the 44 acceptable comparisons involving **Reading Mastery**. To further place this medium to large effect size in perspective, a recent meta-analysis of the effectiveness of the **whole language approach** to reading found **an effect size of only .09** (Stahl & Miller, 1989).
Adams, G., & Engelmann, S. (1996). *Research on Direct Instruction: 25 years beyond Distar*. Seattle, WA: Educational Achievement Systems.

Corrective Reading: Decoding and Corrective Reading: Comprehension are among the programs in the Annotated List of Language Arts Programs adopted by the California State Board of Education in 1999, after it abandoned the Whole Language model it had previously mandated from 1987.

California Department of Education. (no date). *Reading/language arts framework for California public schools: Kindergarten through Grade Twelve* http://www.cde.ca.gov/re/pn/fd/documents/lang-arts.pdf

DI for English language learners
The beginning reading programs with the strongest evidence of effectiveness in this review made use of systematic phonics, such as Success for All, Direct Instruction, and Jolly Phonics, but systematic phonics has been identified as a component of effective beginning reading programs for English proficient students as well (see National Reading Panel, 2000; Gersten & Geva, 2003). … Currently available reading methods known to be effective for English proficient students also accelerate the achievement of English language learners.
Slavin, R.E., & Cheung, A. (2003). *Effective reading programs for English language learners: A best-evidence synthesis*. Baltimore, MD: Johns Hopkins University, Center for Research on the Education of Students Placed at Risk. Retrieved 5/2/2004 from www.csos.jhu.edu/crespar/techReports/Report66.pdf

Making an impact across schools
Seven schools fully implementing *Corrective Reading* moved an average of 10 percent of their student body out of the bottom quartile and improved their mean score by 8 percentage points on the SAT-9. Schools implementing only the decoding component moved 7 percent out of the bottom quartile and improved their mean score by 6 percentage points.
Grossen B. (2004). Success of a Direct Instruction model at a secondary level school with high-risk students *Reading and Writing Quarterly, 20*, 161-178. http://www.higherscores.org/index_files/Success%20of%20DI.pdf
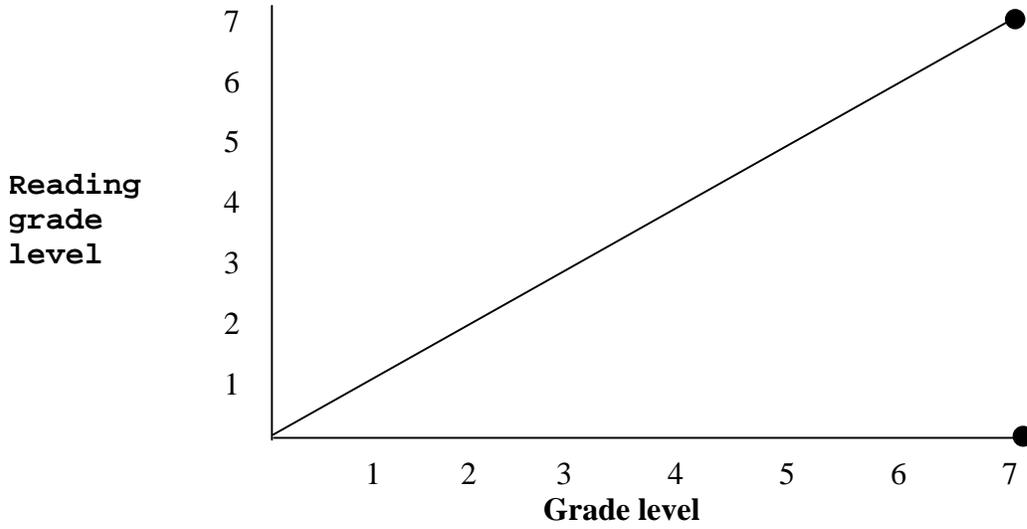
The consensus view of most important instructional features for interventions
- Provide ample opportunities for guided practice of new skills
- Provide a significant increase in intensity of instruction
- Provide systematic cueing of appropriate strategies in context
- Provide systematic and explicit instruction on whatever component skills are deficient: phonemic awareness, phonics, fluency, vocabulary, reading comprehension strategies
- Interventions are more effective when they provide appropriate levels of scaffolding as children learn to apply new skills
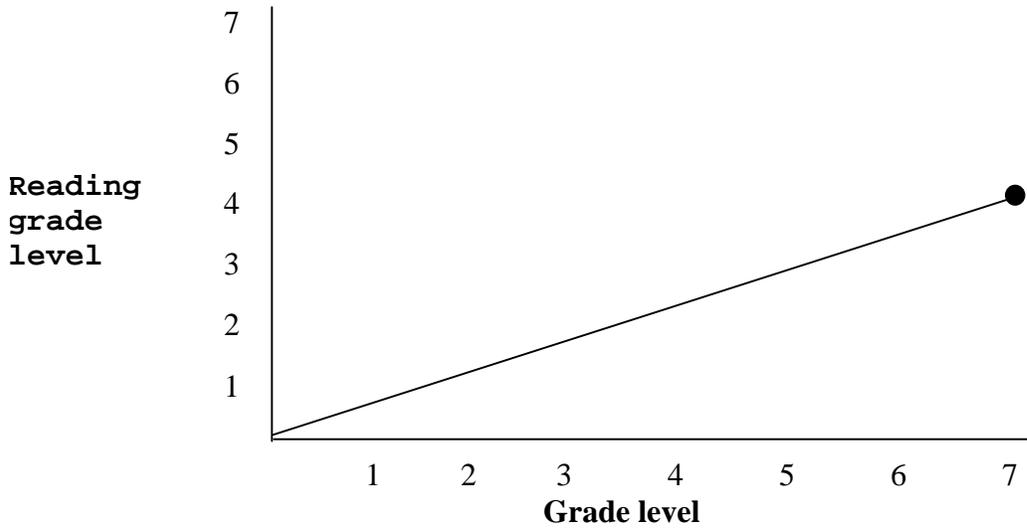
Torgesen, J. (2003). *Using science, energy, patience, consistency, and leadership to reduce the number of children left behind in reading.* Barksdale Reading Institute, Florida. Retrieved 3/5/2004 from http://www.fcrr.org/staffpresentations/Joe/NA/mississippi_03.ppt

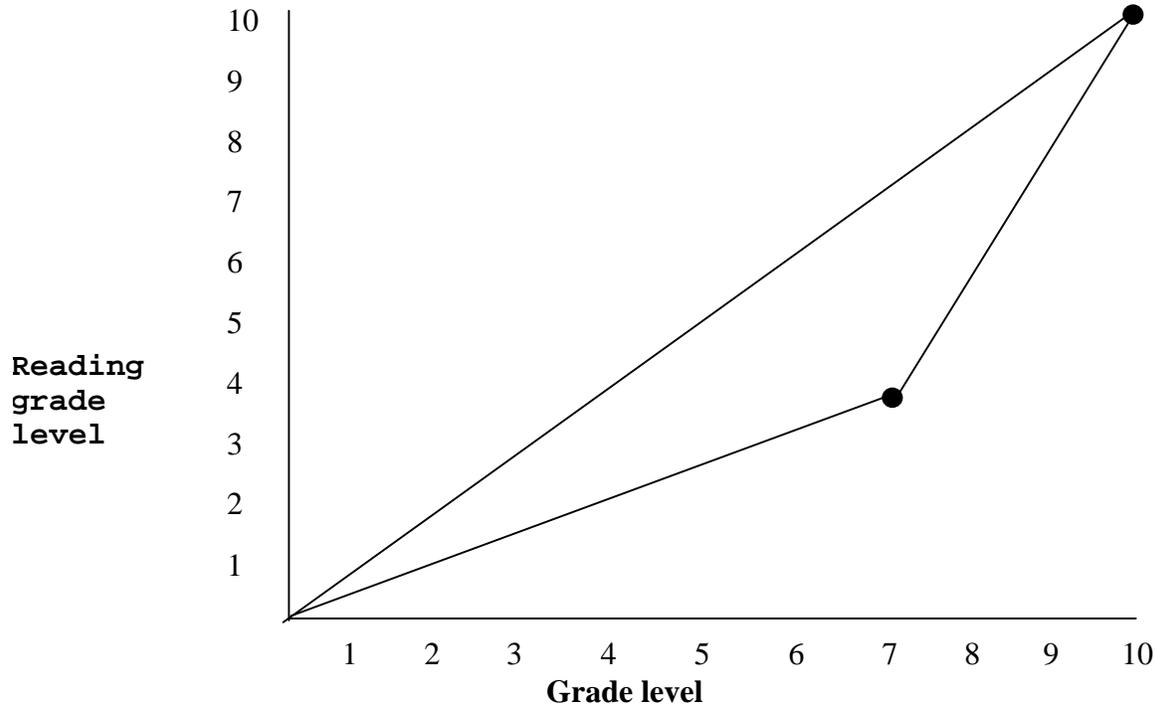**Trying to catch up what's been missed isn't easy!**

Average child

Reading
grade
level

7
6
5
4
3
2
1

1　2　3　4　5　6　7
Grade level

Struggling reader

Reading
grade
level

7
6
5
4
3
2
1

1　2　3　4　5　6　7
Grade level

Catch-up slope

Reading grade level (y-axis: 1–10)
Grade level (x-axis: 1–10)

Characteristics of DI programs
- Clear academic objectives
- Sequenced curriculum presents curriculum in logical order
- Scripted lessons to assist non-specialist teachers
- Choral responses enable monitoring each child
- Brisk pace keeps students engaged
- Correction procedures reduce errors
- Positive reinforcement assists participation
- Numerous massed and spaced practice opportunities for retention
- Continuous progress monitoring and mastery tests to preclude unnoticed failure
- Shown effective for the range of learners from gifted to mild intellectual disability
- Shown effective across ages from beginner to adult.

Corrective Reading program:
A remedial reading program designed for students in Year 3 and above. It comprises two strands: Decoding and Comprehension. Within these strands are a number of levels. (A, B1, B2, C1, C2) corresponding to the students' attainments as assessed with a placement test. The Decoding strand teaches word attack, word identification, and fluency and is most often the first and most salient intervention.

Decoding lessons involve:
- Word-attack skills
- Group story-reading
- Individual reading checkouts
- Workbook activities

For secondary level
Students are often assessed in their final year of primary school or early Yr 7. A screening test such as the Progressive Achievement Tests in Reading (PAT-R) – Revised (2001) ACER. A Group test Yr 4 - 10.

Comprehension 40 min. Eight or nine prose passages - multiple-choice comprehension questions
http://www.acer.edu.au/_images/acerpress/catalogimages/items/PAT.jpg
• Those considered at risk (i.e., are expected to have difficulty with secondary text books, perhaps the lowest 3 stanines i.e., lowest 23%) are offered assistance

Stanines defined descriptively (with percent of scores):
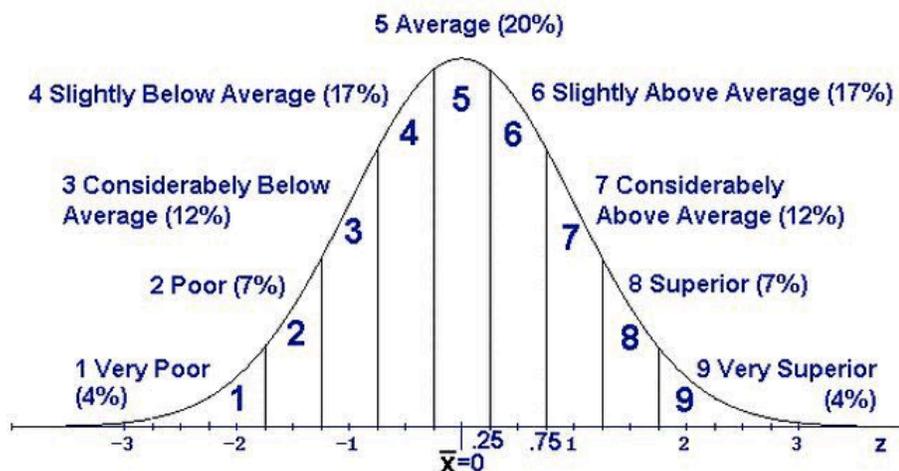
• CRP offered in place of English Program or LOTE program, or simply every day for period X regardless of what the timetable indicates.
• Lesson fits a 50-minute timetable
• Group sizes of 15 or less
• Those seen as at risk are first assessed with the Corrective Reading program Placement Test
http://www.sraonline.com/index.php/home/curriculumsolutions/di/correctivereading/placetestdecoding/663

Placement outcomes are:
• the student's current decoding skill level is below those of the lowest level of the program (Level A), and would be best addressed with a beginning reading program, such as "100 Lessons"
• the student is appropriate for placement in one of the four program levels, or
• the student has already mastered the decoding skills taught at each level, and any reading deficits are probably not in the area of decoding.

Approximate decoding year levels
Level A - early 1st Year to early 2nd
(Start Rate 45 wpm - End Rate 60 wpm)

Level B1 - early 2nd Year to end of 2nd
(Start Rate 60 wpm - End Rate 90 wpm)

Level B2 - early 3rd Year to end of 3rd
(Start Rate 90 wpm - End Rate 120 wpm)

Level C1 - early 4th Year to end of 4th
(Start Rate 100 wpm - End Rate 120 wpm)

Level C2 - early 5th Year to end of 5th.
(Start Rate 120 wpm - End Rate 130 wpm)

Expected Progress: Approximately one grade level in each 65 lesson decoding level

Average reading delay of students arriving at secondary school with reading problems is about 3 years.

• **Level A Decoding** is very basic, but there may be the occasional student in secondary school who has made little progress since Year 1. Level A improves their ability to identify the sounds of letters; sound out words that are presented orally and then blend them; decode some irregularly spelled words; read words "the fast way"; and improve spelling somewhat.

One can train an aide or parent volunteer to teach one-to-one if required.

Level B Decoding allows them to:
- more readily decode unfamiliar words than previously
- develop automatic recognition of some irregular words
- read with increased fluency.

Unlikely that will they have complete reading independence after completing Level B

Outcome of Level C Decoding
- improved ability to manage texts from other subjects
- increased coping with the large number of irregular and technical words.

Even after Level C Decoding, some students may lack basic word knowledge – they may not show good comprehension of orally presented or written material.

Program fidelity:
Departures from the prescribed program such as
- omitting some elements, for example, individual turn-taking, or
- omitting specific exercises or tasks
- failing to detect and correct errors

Each may have a significant effect on the average group progress (if the departures are severe).

For absolute non-readers:
Group program: *Reading Mastery* program (Engelmann & Bruner, 1999). McGraw Hill publisher
1:1 tutoring: For use by parents or in 1:1 tutoring - *Teach Your Child to Read in 100 Easy Lessons*
(Engelmann, Haddox, & Bruner, 1983) from RMIT bookshop (03 99257237

What forms of program evaluation are possible?
- Attention to the accuracy of every student response
- Daily rate and accuracy tasks
- Regular within-program mastery tests
- Formal reading tests
- Questionnaires to teachers, students, parents

So, tell me about DI programs generally
How are they different from other instructional programs?
The Direct Instruction model is highly structured and teacher directed. In terms of responsibility for learning outcomes, it emphasises the role of the teacher. The model is in direct contrast to child-centred, discovery approaches in which student responsibility for learning is paramount. There is a priority on the efficient use of time - maximizing the time students spend engaged in the learning activities. The most obvious difference is that DI lessons are scripted. In a traditional reading program, the teacher is given few guidelines on how to present the material. For example, when teaching reading comprehension the teacher might be told, "Discuss the concept of main idea". Loose guidelines such as this leave tremendous latitude concerning what the teacher actually says and does. It is very easy for teachers to unknowingly change the wording used to teach essential skills or concepts leading to ambiguity, thus making it especially difficult for some students to learn. Teachers may use vocabulary that is too sophisticated for some students, leaving success only to those who can understand the language. In a DI lesson, what the teacher says is actually printed out on the page. The students' responses are also printed out on the page. Teacher wording is thereby controlled, making it easier for students to learn.

DI programs are also different from other programs because they have been researched and tested to prove that they work. There are very big differences between DI and most curriculum materials. They are scripted so that the presenter does not need to be knowledgeable about teaching reading. They cover a lot of curriculum material in a short time because lessons are rapid-paced and because errors are kept to a minimum through careful sequencing of the steps.

In addition to scripted lessons and rapid pacing, are there other ways the DI programs are different?
Yes. Students make many responses during DI lessons, many more, in fact, than they would normally make in standard classroom lessons. In a typical DI lesson, students will make between eight and twelve responses each minute. That means that students will make between 240 and 360 responses in a half-hour lesson. This is particularly important because students get a lot of opportunities to practise correct responses, teachers get many opportunities to praise students for performing correctly, and teachers also get many opportunities to correct student errors. In fact, teachers have the opportunity to correct errors immediately, long before persistent errors develop. A child is likely to reach mastery in a shorter amount of time.

OK, but the students can't always answer correctly or they wouldn't be learning anything, would they?
That's right. Research shows that academic skills are best improved when materials are designed so that students are correct 75-85 percent of the time. This gives students lots of opportunities for success and the praise that comes with it, and it still gives them something to conquer. The DI programs are specifically designed to accomplish a level of correct responding that is about 80% for students who are correctly placed by the placement tests. This means that on about 20% of the questions that students are given the first time, they will make an error. This is intentional planning. Without errors, it is doubtful that the students would be learning much of anything. However, it is a DI principle that all errors are corrected immediately. How to correct errors can be a fairly sophisticated process, but there is a general rule that applies very often: Give the answer, repeat the question, repeat the part of the lesson in which that question appeared, and go on to the next part of the lesson. This procedure always has the effect of having the student practise the correct response when the question is embedded in the lesson.

If the students are just saying the things printed in the book, aren't they just learning by rote?
This is an all too common misunderstanding of DI. Some people feel that it derives from a failure to understand how the programs are put together. After all, if one merely saw one or two lessons, and saw the kind of interaction we've been talking about, it is likely that s/he would get this impression. The students appear to be parroting, especially when the teacher must perform several error corrections. However, a closer look at the way the material evolves from lesson to lesson reveals a very different picture. For instance, in the Reading Mastery program, the student first learns to say when the teacher points to the letter "m". This is appropriately called rote learning. Later, however, the student learns to use this skill in a sophisticated strategy for sounding out words "mmmaaannn." Still later, the student is capable of sounding many regular words that she or he has never before practised. This is not rote learning; it's solving new problems based on well-learned, generalizable skills. (Some of this section was adapted from: Advantage Schools Inc. http://www.advantage-schools.com/home/di.htm)

O.K., but I'm still not convinced. What is the research showing that Direct Instruction programs are effective, and for whom?
Yes, there is quite a lot. The most important research study is called Project Follow-Through. It was a federally funded project that began in the early 1970's. About a dozen different programs were tested at school sites located all over the U.S. to see whether any of them could help maintain the gains that poverty-level students made in Project Headstart, but lost almost as soon as they started public school. The programs represented all important educational philosophies, including open-classrooms, Piagetian-based learning, behaviour modification, and DI. The DI program consisted of reading, math and language programs. The results overwhelmingly supported the superiority of the DI method over all other programs. All tests of academic skills not only showed the DI programs to be superior, but DI was the only program to bring these low-performing students within the national norm. In addition, the DI programs proved superior in social measures, such as measures of "self-esteem," even when compared to programs that directed their energy specifically at improving self-esteem.

"Research on best practices indicates that instruction directed by teachers, targeting specific skills, and delivered to small groups is particularly efficacious."
Stevens, R.J., Slavin, R.E., Farnish, A.M. (1991). The effects of co-operative learning and direct instruction in reading comprehension strategies on main idea identification. *Journal of Educational Psychology, 83,* 8-16.

"The decade of the 1990s will witness, in classrooms serving students with <u>mild mental retardation</u>, 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, J., & Frank, A. (1993). Engagement and performance feedback: Enhancing the classroom achievement of students with mild mental disabilities. In R. Gable and S. Warren (Eds), *Advances in mental retardation and developmental disabilities: Strategies for teaching students with mild to severe mental retardation*. Vol.5. Philadelphia: Jessica Kingsley.

"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 <u>mild mental retardation</u>.....A substantial amount of research evidence now supports the effectiveness of this approach for <u>special education</u>."

Scruggs, T. & Mastropieri, K. (1993). Teaching students with mild mental retardation. In R. Gable and & S. Warren (Eds.), *Advances in mental retardation and developmental disabilities: Strategies for teaching students with mild to severe mental retardation.* Vol.5. Philadelphia: Jessica Kingsley.

"... the areas discussed may be viewed as illustrations of the general applicability of effective instructional methods to training autistic children...... The similarity of teaching methods suggests that <u>principles</u> underlying effective instruction may be more influential in the process of learning than the special characteristics of any <u>particular student population.</u>"

O'Neill, R. & Dunlap, G. D.I. principles in teaching autistic children. *Direct Instruction News*, Spring. 1984.

"Thus techniques based on *direct and effective instructional* practices are anywhere from 5 to 10 times more effective than the "special" practices attempting to cure <u>LD</u> (learning disabled) students by influencing unobservable constructs (e.g. perception)....thus the effective schooling research needs to be better integrated into LD practice."

Kavale, K. (1990). Variances & verities in learning disability interventions. In T. Scruggs and B. Wong (Eds), *Intervention research in learning disabilities*. New York: Springer Verlag.

"The documented success ... of *direct instruction* reading programs with thousands of <u>hard-to-teach and high-risk children</u> is unsurpassed in the annals of reading history."

Bateman, B. (1991). Teaching word recognition to slow learning children. *Reading, Writing & Learning Disabilities, 7*, 1-16.

"Children with deficits or weaknesses in these skills should be identified early (kindergarten or first grade), and educators and speech pathologists should work together to provide *direct instruction* in these areas." (Also see Catts, 1991; Felton, 1993).

Wood, F. B., & Felton, R. H. (1994). Separate linguistic and attentional factors in the development of reading. *Topics in Language Disorders, 14,* 42-57.

"Effective reading programmes are not differentially effective - they are equally effective for <u>all groups of children</u>". p. 234.

Goyen, J. (1992). Diagnosis of reading problems: Is there a case? *Educational Psychology, 12*, 225-237.

Is DI only for the low performers? Effects across different ability levels

Results of Direct Instruction on reading as measured by the Wide Range Achievement Test for students with diverse IQ scores. Adapted from Gersten et al. (1984).
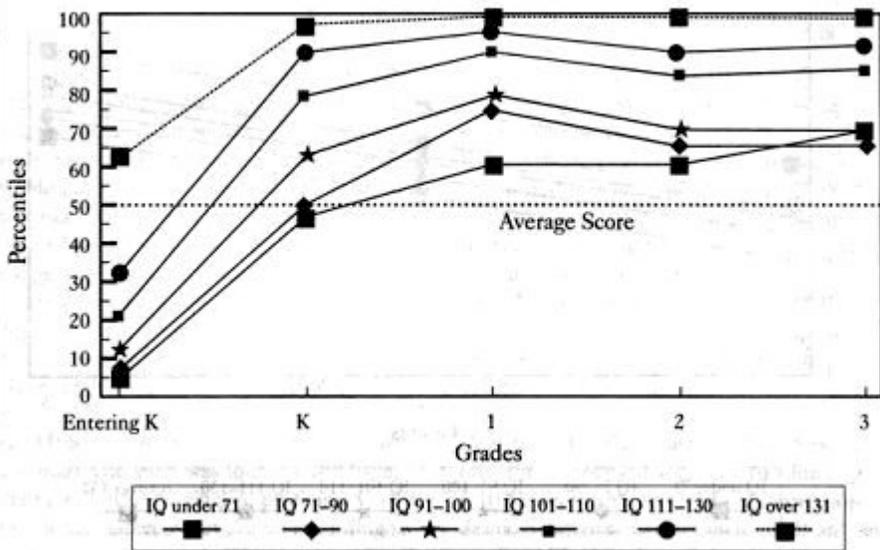
All testing was performed at end of academic year, except EK.

Figure 2.12

Results of Direct Instruction on math as measured by the Metropolitan Achievement Test for students with diverse IQ scores. Adapted from Gersten et al. (1984).
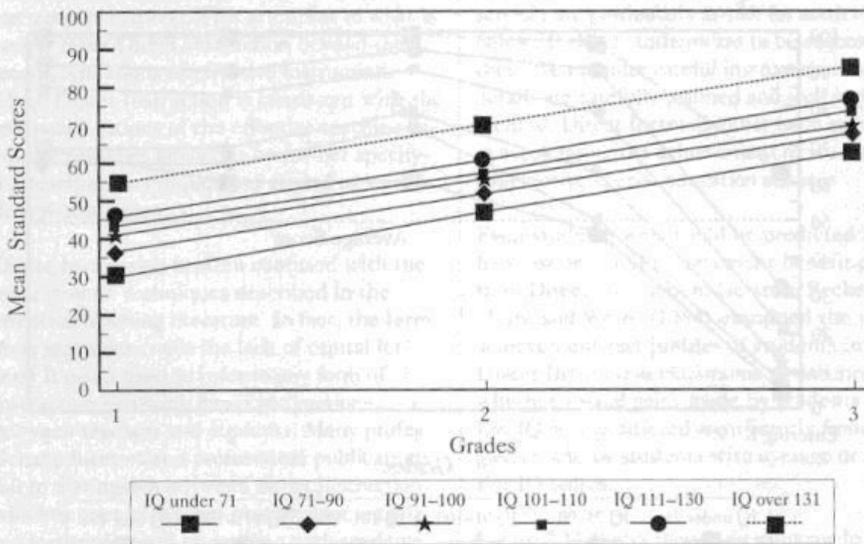
All testing was performed at end of academic year.

Summary of research findings on various interventions

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

Intervention	No. of studies	Av. effect size
Perceptual-motor training	180	0.08
Modality instruction (Learning Styles)	39	0.14
Direct Instruction	25	0.84

Where should we focus - decoding or comprehension? Isn't reading really about comprehension?

In 90% of cases, the source of reading comprehension problems is poor word recognition skills (Oakhill & Garnham, 1988).
Stuart,M. (1995). Prediction and qualitative assessment of five and six-year-old children's reading: A longitudinal study. *British Journal of Educational Psychology, 65*, 287-296.

Even among experienced readers individual differences in comprehension of text reflect efficiency of phonological processing at the word level.
Shankweiler, D., Lundquist, E., Dreyer, L. G., & Dickinson, C. C. (1996). Reading and spelling difficulties in high school students: Causes and consequences. *Reading and Writing: An Interdisciplinary Journal, 8,* 267-294.

Once decoding skills are automatized, growth in text comprehension follows.
Foorman, B., Francis, D., 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.

Differences in reading comprehension could be explained by differences in phonological coding on non-words, but not by differences in semantic word knowledge. p. 220
Elbro, C., Nielsen, I., & Petersen, D. K. (1994). Dyslexia in adults: Evidence for deficits in non-word reading and in the phonological representation of lexical items. *Annals of Dyslexia, 44*, 205-226.

Decoding problems account for the majority of cases of severe reading disability among students of otherwise average intellectual ability (see reviews by Stanovich, 1988; Vellutino & Denckla, 1991). p. 47
Spector, J. (1995). Phonemic awareness training: Application of principles of direct instruction. *Reading and Writing Quarterly, 11,* 37-51

To examine the relationship between word decoding and reading comprehension, Shankweiler et al. (1999) assembled 361 English-speaking children aged 7.5 to 9.5, of whom 168 had reading disabilities. They found the simple ability to read aloud a list of English words accounted for 79% of the variance in reading comprehension ($r = .89$, $p < .0001$). Even the ability to do the same thing with non-words (e.g., skirm, bant) correlated very highly with reading comprehension, accounting for 62% of the variance ($r = .79$, $p < .0001$).
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.

In each grade, skill in word recognition was more predictive of reading comprehension than was listening comprehension.
Juel, C. (1993). The spelling-sound code in reading. In S. Yussen & M. Smith (Eds.), *Reading across the life span* (pp. 95-109). New York: Springer-Verlag.

Facility in decontextualised word identification is a basic prerequisite for extracting meaning from written text. ... performance on the word identification measure was the best predictor of performance on the reading comprehension test.
Vellutino, F. R., Scanlon, D. M., & Tanzman, M. S. (1994). Component of reading ability: issues and problems in operationalizing word identification, phonological coding, and orthographic coding. In G. R. Lyon (Ed.), *Frames of reference for the assessment of learning disabilities: New views on measurement issues*. Philadelphia: Brookes Publishing Co., pp. 279-332.

The groups receiving direct instruction in alphabetic code had significantly greater reading comprehension than the literature-emphasis groups. These results are not surprising, given the need for

decoding to be sufficiently automatic that memory and attention can be devoted to grasping the gist of the text.
Foorman, B., Francis, D., & Fletcher, J. (1997, March 18). *Breaking the alphabetic code, A17*. The Globe and Mail.

"Research suggests that teaching children to read words quickly and accurately can also increase their reading comprehension (Tan & Nicholson, 1997). The theory behind fast and accurate word reading is that good readers are very good at reading words. They have over-learned this skill through much reading practice. As a result, like skilled musicians and athletes, they have developed automaticity, as a result of many hours of word reading practice. What this means is that they have over-learned word reading skills to the point where they require little or no mental effort. As a result, they are able to put all their mental energies into reading for meaning."
G. B. Thompson & T. Nicholson (Eds.) (1998). *Learning to read: Beyond phonics and whole language*. New York: Teachers College Press.

So, from the above, there is evidence that decoding and fluency are worthwhile emphases for a secondary literacy program

Corrective Reading: Decoding strand (general issues common to the various program levels)

Facts About The Problem Reader (taken from the CRP Series Guide)

The Corrective Reading program series is designed to change the behaviour of the problem reader. The specific decoding tendencies of the problem reader suggest what a program must do to be effective in changing this student's behaviour.

- The problem reader makes frequent word identification errors.
- The student makes a higher percentage of mistakes when reading connected sentences than when reading words in word lists.
- Often the student reads words correctly in word lists and misidentifies the same words when they are embedded in connected sentences.
- The specific mistakes the reader makes include word omissions, word additions, confusion of high-frequency words (such as *what* and *that, of* and *for, and* and *the*)**.**
- The student also reads synonyms (saying *pretty* for *beautiful*)**.**
- The student often guesses at words, basing the guess on the word beginning or ending. And the student is consistently inconsistent, making a mistake on one word in a sentence and then making a different mistake when re-reading the sentence.
- The student doesn't seem to understand the relationship between the arrangement of letters in a word and the pronunciation of the word.

Often the student is confused about the "word meaning" (a fact suggested by "synonym reading", "opposite reading", and word guessing). The strategy seems to be based on rules the student has been taught.

The problem reader follows such advice as: *Look at the beginning of the word and take a guess; Think of what the word might mean,* and *Look at the general shape of the word.* The result is a complicated strategy that is often backwards: The student seems to think that to read a word one must first *understand* the word, then select the spoken word that corresponds to that understanding.

Although the problem reader may use a strategy that is *meaning based*, the reader is often preempted from comprehending passages. The reason is that the student doesn't read a passage with the degree of accuracy needed to understand what the passage actually says. (Omitting the word not from one sentence changes the meaning dramatically.)

Furthermore, the student's reading rate is often inadequate, making it difficult for the student to remember the various details of the passage, even if they were decoded accurately. Often the problem reader doesn't have an effective reading

The student receives daily practice in oral reading, with immediate feedback.

(Only through oral reading can we discover what the student is actually reading.)

The student reads word lists with information about how to pronounce various letter combinations (such as *th* and *or*). The student also reads sentences and passages composed of words that have been taught. The sentences and passages are designed so they are relatively easy if the student approaches words as entities that are to be analyzed according to the arrangement of letters, but difficult if the student guesses oh the basis of the context or syntax of the sentence. (The sentences are designed so that guesses often lead to mis-identification of the word.)

The mastery tests and checkouts in the series assure that the student observes progress in reading rate and reading accuracy. The series presents comprehension items in a way that demonstrates the relationship between what is decoded and how it is to be understood. Initially, the comprehension activities are deliberately separated from the decoding activities so that the student's misconceptions about reading are not exaggerated. The comprehension activities, however, show the student that what is read is to be understood.

Finally, the series addresses the problem reader's poor self-image. The series is designed so the student can succeed on real reading tasks. Furthermore, a point system that is based on realistic performance goals assures that the reader who tries will succeed and will receive reinforcement for improved performance.

In summary, the series uses a two-pronged approach. Each level teaches effective reading skills to replace the student's ineffective approach to reading. Each level also contains an effective management system that turns students on to reading. This turn-on is not achieved by "seducing" the reader with entertaining topics but by rewarding the reader for steady improvement in reading performance. The approach WORKS.

Finally, the poor reader is not a highly motivated student. For this student, reading has been punishing. The student often professes indifference: "I don't care if I can read or not." But the student's behaviour gives strong suggestions that the student cares a great deal. The student's ineffective reading strategies and negative attitudes about reading become more ingrained as the reader gets older. To overcome them requires a very careful program, one that systematically replaces the strategies with new ones and that provides lots and lots of practice.

The problems

An effective corrective reading program must address the specific needs of the problem reader. The learner must learn to look at the order of letters in a word and learn that this order suggests the general *pronunciation* of the word. Furthermore, the student must learn that the game is simple: First figure out how the letters suggest one should say the word. Then see if the word you say is one that you recognize, one that has meaning. (Note that this strategy is basically the opposite of the one the typical problem reader uses.)

The problem reader must receive practice in reading connected sentences that are composed of words that have been taught in isolation. Merely because the student reads words in lists does not imply transfer to written sentences. The student must receive strong reinforcement for working on reading because the task is very difficult and frustrating for the student. The student has received a great deal of evidence that reading is a puzzle that can't seem to be solved.

Finally, the student must receive practice in reading a variety of passages. If the student practices reading only narrative passages, the student will not "automatically" transfer the reading skills to textbooks, articles, or other forms of expository writing. Therefore, different styles must be introduced.

The **Corrective Reading** decoding programs are successful with problem readers because they provide the careful integration, the practice, and the management details that the problem reader needs to succeed.

Corrective Reading decoding program design

There are two major features evident in the CRP. They are the emphasis on decoding skills (phonics) and the Direct Instruction approach to teaching the phonics content. It includes work on both isolated words and connected sentences, but its major emphasis is at the level of word structure. It is made clear to students that the decoding of novel words involves careful word analysis rather than partial cue or contextual guessing. Students are continually prompted to take account of all letters in a word, and become sensitised to common (and often problematic) letter groupings, for example, those beginning with combinations *st, bl, sl, fl, pl, sw, cl, tr, dr***;** or

ending with *nt, nd, st, ts, mp, ps, cks, ls, ms, th, er, ing, ers, y*. The sentences provided are constructed in a manner which allows few clues for contextual guessing, but provides ample opportunities to practise what has been learned in the teacher-presented word-attack segment of the lesson.

Lessons are designed to be provided in groups of up to 15 students. Most first time groups comprise about 10 students. The rationale for this reduction involves the lack of experience of the teachers with the program, and the observation that in most groups of poor readers there are usually several students difficult to motivate, and maintain on-task.

This first hurdle is difficult for teachers more used to a less directive model of teaching. Lessons are scripted, and most teachers report requiring at least 20 lessons before reasonable comfort with the approach is achieved. Teacher support is valuable in the early stages to assist in this skill development, and to preclude teacher-initiated program changes that may jeopardise program success. The requisite level of support varies from teacher to teacher; however, in most cases it is difficult to provide the extensive training model described by the program designers.

The program designers argue that the program combines the benefits of 1:1 tutoring with the effectiveness of group instruction. This is achieved by the use of choral responses prompted by various signals (a new skill for most teachers). Not only must teachers follow a script, but they must be able reliably to signal students when to respond, and then pay attention to each student's response in order to monitor skill development and teaching effectiveness. The results of this monitoring process help determine lesson pacing by controlling the amount of repetition necessary for mastery. The larger the group, the more difficult it is to continuously monitor every student's progress - thus smaller group sizes are helpful for first-time program teachers. As teachers' reliance on the script diminishes, and as their signalling improves, so their adroitness at student monitoring improves and they are better able to manage larger groups.

The issues of behaviour management looms larger in secondary than primary schools. Participation in the reading program often involves parent, but not student, consent; that is, students were not volunteers. Most schools considered the needs of the students too important to allow students the right of veto. To help motivate students whose history has made reading a non-preferred activity, the program includes a points system for each lesson segment. Most schools perceive the advantage of this system and incorporate it successfully into their plan. The potential for program disruption by a few disillusioned students is an additional reason for beginning with smaller group sizes.

Lessons typically range from 45 minutes to one hour, dependent on teacher lesson pacing. Typically pacing improves with experience, but initially some teachers are unable to complete a whole lesson in the time allotted.

Program design specifies an optimum schedule of five lessons each week. This level of intensity has been found important for students with reading problems, as they tend to have difficulty retaining new skills and knowledge. For this reason, there is strong emphasis on massed practice for mastery, and spaced practice for retention. If lesson frequency falls significantly, retention may be jeopardised leading to a general progress deceleration. However not all schools are able to timetable five lessons per week, and even those which do so find competing events sometimes forced class cancellation.

The Corrective Reading Program is often chosen as the intervention program for the RMIT Psychology Clinic because of my experience with it, and its record of success in improving the reading outcomes for children at-risk. This has been noted in the empirical studies available in the research literature, and also in the regular evaluations I perform in schools and in the Clinic. At the Clinic we also train parents to provide the program to individual students.

Corrective Reading Series Guide: Information about each level
DECODING A: *Who it's for*

Decoding A is appropriate for extremely poor readers in the second half of grade 3 through high school who virtually lack decoding skills. These students read so inaccurately and haltingly that they are prevented from comprehending what they read.

What is taught The following skills are taught in **Decoding A**.
• Identifying the sounds of letters.
• Sounding out words that are presented orally and then saying them fast.
• Decoding irregularly spelled words.
• Reading words "the fast way".
• Reading short selections
• Reading sentences
• Spelling.
Related skills such as matching, word completion (for example, rhyming), and symbol scanning are included on the student worksheets.

The basic objective in **Decoding A** is to teach students that there are regularly spelled words, words that are pronounced by blending the sounds of the letters in them. Once students understand that the identification of a word is related to its spelling, irregularly spelled words, such as **said** and **what**, are introduced. These words are spelled one way but pronounced in different, irregular" way.

The sentence-reading exercises give students practice in reading words that are presented within a context. Usually students who qualify for this program do not understand what decoding is. This problem is magnified when they try to read sentences. Usually, their sentence-reading strategy involves guessing based on the syntax or the position of words within the sentence. For instance, they guess that the first word is the.

The objective of the sentence-reading activities is to retrain students in how to read words in sentences. Although work on isolated words (in lists) teaches word-attack skills, practice in reading sentences ensures that students apply these skills.

The sentences in this program are designed so that there is low probability of guessing a word correctly. If students guess the next word in a sentence on the basis of the preceding words, they most likely will be wrong. The low probability feature provides students with consistent evidence that guessing is not effective. A guess equals a mistake; therefore, students quickly abandon the guessing approach and use the decoding skills being taught.

The story-reading exercises give students practice in decoding material similar to what they will encounter at the beginning of **Decoding B1** and in answering comprehension questions about what they have read.

Outcome behaviour
Upon completion of **Decoding A**, students should be able to do the following activities.
• Read sentences, such as **She was a master at planting trees**. These sentences are composed primarily of regularly spelled words (containing as many as six sounds).
• Read short selections, such as the following:
> **Ten men got in a truck.**
> **They went to the creek and set up a tent.**
> **How can ten men fit in the tent?**
> **They can not.**
> **Six men will sleep under a tree.**
• Read common irregular words such as **what, was, do, said, to, of**, and **you** with only infrequent errors.
• Read words that begin with difficult letter combinations such as **st, bl, sl, fl, pl, sw, cl, tr, dr.**
• Read words that end with difficult letter combinations such as **nt, nd, st, ts, mp, ps, cks, ls, ms, th, er, ing, ers, y**.
• Pronounce commonly confused words parts such as the **k** sound in **trick**, the **e** sound in **set**, the **s** ending sound in **mats, runs**, and **munches**.

- Spell simple words that have a clear sound-symbol relationship, including words that contain **th, wh, sh, ch**, and various other letter combinations.
- Independently perform on various simple activities, such as matching sounds and completing words with missing letters.

Other activities are independent. The workbook activities take about 10 minutes. Students earn points by staying within an error limit for errors on the worksheet for the lesson.

DECODING B1 *Who it's for*
Decoding B1 is appropriate for most problem readers in grades 3 through 12. They guess at words. They have trouble reading words like **what, that, a,** and **the** when the words appear in a sentence context. They add or omit words. They often read synonyms for printed words and are generally inconsistent in their reading behaviour (reading a word correctly one time and missing it the next time).

What is taught The typical Decoding B1 lesson is divided into four major parts.
1. Word-attack skills
2. Group story-reading
3. Individual reading checkouts
4. Workbook activities

Word-attack skills take up about 10 minutes of the period. Students practice pronouncing words, identifying the sounds of letters or letter combinations, and reading isolated words composed of sounds and sound combinations that have been learned by the students. Students earn points for performance in the word-attack portion of the lesson.

Group story-reading follows immediately after word-attack skills. This part of the lesson takes approximately 15 to 20 minutes. Students take turns reading aloud from their student book (storybook). Students who are not reading follow along. The stories are divided into parts. If the group reads a part within the error limit, the teacher presents specified comprehension questions for the part.

Individual reading checkouts follow the group story-reading and take about 10 minutes. Assigned pairs of students read two passages. The first is from the lesson just read by the group; the second is from preceding lesson. Each member of the pair first reads the passage from the current story, then the passage from the preceding lesson. A student can earn points for both passages. Points for the first passage are earned if the student must read the passage within a specified rate criterion and also a specified error criterion. (For instance, the student must read 85 words in one minute, with no more than two errors).

Workbook activities are presented as the last part of the lesson. Some of these activities are teacher-directed and are very important to the students' skill development.
Although the content "distracts" the reader, for the reader to read with acceptable accuracy. During lessons 1 through 5, students read only isolated sentences (totaling about 75-100 words). The stories begin on lesson 6 and continue on each lesson. Their length increases from about 200 words to 700 by lesson 60.

Students receive practice in comprehension skills with the following activities:
- Orally answering questions about each part of the story after reading the part within an error limit.
- Writing answers to a variety of comprehension items that require call of story events, sequencing, and characters

The daily oral reading checkouts provide each student with a lot of practice in reading connected sentences. Because the student work in pairs, the entire checkout doesn't take very long, about 10 minutes for both checkouts help students gradually develop acceptable reading rates (from 55 words per minute at the beginning of the program to 90 words per minute at the end).

The workbook activities are carefully integrated with the word-attack activities and with the stories that the students read. From lesson to lesson, there is a careful development of skills in the workbook. It is very important for the students to do the workbook activities as part of each lesson.

Each worksheet is one page. The different activities provide students with practice in writing sounds copying, answering comprehension questions, spelling and transforming words. Many of the activities deal with word details because these are the details the problem reader tends to ignore.

The following activities are included in Level B word-attack skills.
- Pronouncing words with consonant blends (**slam, cast, flip**), orally constructing words with endings (adding ed to **show** to pronounce **showed**), and identifying the component sounds of orally presented words.
- Identifying the long and short sounds of the vowels **o, e, a, and I**.
- Identifying the sounds of consonants.
- Identifying the sounds of letter combinations (**th, ee, sh, or, ol, ch, wh, ing, er, oo, ea, oa, ai, ou, ar, oul, ir, igh, al**) and reading words with those combinations.
- Reading lists of regularly spelled words, such as **mat** and trip, and irregularly spelled words, such as **what** and **said**.
- Reading words that contain difficult consonant blends (**drop, splash, slip**).
- Reading words with endings (**dropping**, **rested**)
- Reading silent-e words (save, times, hoped).
- Reading compound words (**herself, anybody**).
- Practicing patterns drills that demonstrate consistent phonic relationships (**big, bag, beg, bug**).

The stories in **Decoding B1** increase in length, difficulty, and interest. All stories are composed of words that have been taught in the series or words that the students can already read. After new words and word types are introduced in the word-attack activities, the words are incorporated in stories. Furthermore, the introduction of words in stories is cumulative, which means that once words have been introduced, they recur in the stories.

The syntax and structure of the stories are designed for the problem decoder and are designed to correct the mistake s the reader typically makes. Early stories are "low interest" stories because the poor reader must concentrate on a new game - looking at words and identifying the, without guessing. With higher interest stories, the reader becomes preoccupied with the content of the story and reverts to habitual, inappropriate decoding strategies, which means that errors increase greatly. Later in the program, after students have practiced the game of accurate decoding, the stories become more interesting. Appropriate strategies are now strong enough.

Outcome behaviour
Upon completion of Decoding B1, students' progress can be seen in both improved accuracy and improved rate. Students can read the passage from lesson 65 with 98 percent accuracy and at a minimum rate of 90 words per minute.

So how many levels of the Corrective Reading program do we have to put our students through?
The early levels begin to retrain students to attend to word parts (letters, letter groups) and this takes time, as does the overcoming of previously entrenched though unsuccessful strategies, such as guessing from context or from the first letter or so. The stories in the Corrective Reading program are intentionally constructed to scaffold the students' developing decoding ability. However, these decodable-text stories, though developmentally important, do not reflect the inconsiderate text associated with age-related interest level reading or school texts. Those sources are uncontrolled for regularity, usually employing many irregular words that are likely to trouble our developing reader. Thus students may not show great improvement on texts outside the program despite the dramatic development in the skills of reading. It is not until Level C: Decoding that students begin to accelerate the growth of their store of irregular words. To enable a student to cope with the complexity of secondary school texts, completion of Level C: Decoding is advisable.
Engelmann, S., Carnine, L., Johnson, & G., Meyer, L. (1988). *Corrective Reading: Decoding C.* Chicago: Science Research Associates.

Decoding C: Skills Applications

The fourth and most advanced level of the decoding programs in SRA's Corrective Reading series is Decoding C Skill Applications. This program is designed to teach advanced word-attack skills. The basic thrust of the program is to **help students develop the skills necessary to decode a wide variety of words** and to handle different sentence constructions as they appear in many kinds of reading materials.

By completing Decoding B2, students have become far more accurate decoders. However, poor decoders have practiced faulty decoding strategies-guessing on the basis of word beginnings, context, syntax, and so on-for many years. Usually, the habits built up during this period are not neutralized through only 1 school year of work. Although in 1 year students acquire the basis of a new strategy, they need continued practice in using word-attack skills to firmly establish the newly formed accuracy habits. And the students need more than to merely practice the word attack and story-reading skills presented in Decoding B1 and 132. In those programs,. the vocabulary and syntax of the fictional selections are highly controlled. Students are not confronted with either the vocabulary or the sentence forms that appear in textbooks. The passive voice, the use of parenthetical (non restrictive) clauses, the longer multiclause sentences, and similar constructions are deliberately avoided in Decoding B1 and 132.

One goal of Decoding C is to fill the gap between tightly controlled syntax and vocabulary presentations and presentations typically encountered in traditional reading materials.

Another goal is to present the meaning of words frequently encountered in text materials. Vocabulary exercises are presented so students will be introduced to new words before reading them. Many of the more than 600 words included in the vocabulary exercises are words students have already encountered; however, students frequently have only a vague or incorrect notion of their meaning. .

Another goal is to provide reinforcement of a broad variety of comprehension question types. The types include literal comprehension, vocabulary, new information facts, and inferential reading.

Another goal of Decoding C is to help students apply the decoding skills taught in the program to reading material encountered outside the program. Because the procedures used in Corrective Reading instruction are unique, students sometimes fail to realize that the skills are applicable to material outside the program. After all, for years these students have not been able to handle material in various subject areas successfully. Unless they receive pointed demonstrations that undermine the I-can't-do-this attitude, students may continue to read successfully in the Corrective Reading group and still not apply these skills to other reading situations. Decoding C demonstrates how to apply new skills to reading newspapers, magazines, and textbooks.

The final goal of this program is to decrease students' dependence on highly structured presentations and to place greater emphasis on their independent, self-initiated work. Students contribute subject-matter ideas for the reading material that comes from outside the program. Then they select word-attack words from this outside material. Although students continue to receive adequate repetition of words in the word-attack portion of the lesson, the teacher's role as guide is generally reduced.

In summary, Decoding C bridges the gap between a carefully controlled and directed presentation and an independent one in which vocabulary and syntax have not been screened. The program exposes students to new vocabulary words and new kinds of comprehension items. Oral reading practice continues throughout the program to provide the teacher with a means of assessing students' reading accuracy. The scope of the reading material expands as students progress through the program, and the amount of silent reading and independent work increases. Students who are carefully taught will complete the program with decoding skills that will allow them to read a variety of fictional and expository materials.

Who it's for.

Decoding C is designed for relatively poor readers in grades 3 through 12. The program is appropriate for students who understand English and whose scores on the Corrective Reading placement test indicate that they

belong in the program. Decoding C is not appropriate for students who do not speak any English, or whose grasp of English is quite weak.

Extensive use of Decoding C has demonstrated that the program works effectively with students who traditionally would be identified as learning disabled, educationally handicapped, or perceptually handicapped. As long as students demonstrate the skill level necessary to enter the program, they may be placed in the program.

Finally, students who meet the rate and accuracy criteria at the end of Decoding B2 qualify for this program. There is no need to re-administer the placement test to these students unless the test is used as a criterion-referenced mastery measure.

What is taught
The skills taught in Decoding C are word attack, selection reading, and comprehension.
The following activities are included in Word Attack Exercises.
- A review of words containing sound combinations such as th, oa, ea, ai, ou, ar, ir, er, ur, igh, oi, tion, c(e,i), g(e,i)
- Introduction of the sound combinations ure, aw, au, tial, cial
- Introduction of the meaning of more than 400 vocabulary words
- Introduction of the meaning of the affixes ex, ly, un, re, dis, pre, tri, sub, less, ness, able
- Practice in reading words containing the various sound combinations and affixes
- Practice in writing complex words as root words plus affixes

The following activities provide practice in selection-reading skills.
- Reading selections that give specific factual information on a particular topic
- Reading selections that are fictional
- Reading selections that contain a high percentage of new words
- Reading selections from magazines, newspapers, and other sources

The following activities provide practice in comprehension skills.
- Answering orally presented comprehension questions about the selections that are read
- Writing answers to a variety of comprehension questions, including both literal and inferential items
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The materials
The materials for Decoding C consist of this Teacher's Guide, two Teacher Presentation Books with answers for the student Workbook, a non-consumable Student Book, and a consumable student Workbook.

This guide contains basic information about the program and specific information for presenting exercises and correcting mistakes. The Guide also includes a copy of the Decoding Placement Rest (Appendix A), a Scope and Sequence Chart (Appendix B), a list of Behavioural Objectives (Appendix C), an alphabetical Glossary of Defined Words (Appendix D), and a Skills Profile Chart (Appendix E).

Teacher Presentation Book Cl covers Lessons 1-60; Book C2 covers Lessons 61-125. Both books contain a glossary of defined words.

The Teacher Presentation Books contain a script for each lesson. Scripts specify what you say and do and how students are to respond. This blue type indicates what you say. (This type indicates what you do.) This italic type shows the students' response. The following sample from Lesson 26 demonstrates how the type is used.

So what are the issues in reading comprehension emphasised by the National Reading Panel?

Evidence indicates that, in order to be able to read, children must be able to decode text, translating it into a speech form, but children must also be able to understand spoken language if they are to understand what they decode.
From the results of the National Reading Panel, at: http://www.nichd.nih.gov/publications/nrp/report.htm

Comprehension has come to be viewed as "the essence of reading " (Durkin, 1993). This knowledge a reader brings with him enables the reader to make meaning of the text, to form memory representations of these meanings, and to use them to communicate with others information about what was read.

Readers normally acquire strategies for active comprehension informally. Comprehension strategies are specific procedures that guide students to become aware of how well they are comprehending as they attempt to read and write. Explicit or formal instruction on these strategies is believed to lead to improvement in text understanding and information use. Instruction in comprehension strategies is carried out by a classroom teacher who demonstrates, models, or guides the reader on their acquisition and use. When these procedures have been acquired, the reader becomes independent of the teacher. Using them, the reader can effectively interact with the text without assistance. Readers who are not explicitly taught these procedures are unlikely to learn, develop, or use them spontaneously.

Cognitive strategies for improving reading comprehension
Comprehension strategies are procedures that guide students as they attempt to read and write. For example, a reader may be taught to generate questions about the text as it is read. These questions are of the why, what, how, when, or where-variety; and by generating and trying to answer them, the reader processes the text more actively. The value of cognitive strategies in comprehension instruction is, first, their usefulness in the development of instructional procedures, and second, the learning of these procedures by students as an aid in their reading and learning, independent of the teacher.

Typically, instruction of cognitive strategies employed during reading consists of:
1. The development of an awareness and understanding of the reader ' own cognitive processes that are amenable to instruction and learning
2. A teacher guiding the reader or modeling for the reader the actions that the reader can take to enhance the comprehension processes used during reading
3. The reader practising those strategies with the teacher assisting until the reader achieves a gradual internalization and independent mastery of those processes (Palinscar & Brown, 1984; Paris & Oka, 1986; Pressley et al., 1994).

Durkin 's (1979) highly cited observational studies of reading instruction in grade 4 showed that most teachers, in fact, spent little time on comprehension instruction. Only 20 minutes of comprehension instruction was observed in 4,469 minutes of reading instruction. This lack was echoed by Duffy, Lanier, and Roehler (1980). They described teachers as spending time in assigning activities, supervising and monitoring students as to being on task, directing recitation sessions as a way of assessing what the students were doing, and providing corrective feedback when the students erred. The teachers did not teach or show the students' skills, strategies, or processes that they could use in reading to comprehend what they read and to be successful in learning information in the text.

The Panel identified 453 studies on comprehension. The seven individual strategies that appear to be effective and most promising for classroom instruction are (in alphabetical order) **comprehension monitoring, cooperative learning, graphic and semantic organizers including story maps, question answering, question generation, and summarization**. In addition, many of these strategies have also been effectively used in the category "multiple strategy, "where readers and teachers interact over texts.

"Becoming an effective transactional strategies instruction teacher takes several years "(Brown et al., 1996, p. 20). "The data suggests that students at all skill levels would benefit from being taught these strategies" (Rosenshine, Meister, & Chapman, 1996, p. 201).

Reading comprehension improvement occurs when teachers demonstrate, explain, model, and implement interaction with students in teaching them how to comprehend a text. In studies involving even a few hours of preparation, instructors taught students who were poor readers but adequate decoders to apply various strategies to expository texts in reading groups, with a teacher demonstrating, guiding, or modeling the strategies, and with teacher scaffolding (e. g., Palinscar & Brown, 1984; see Rosenshine, Meister, & Chapman, 1996 for a review).

Students using these strategies, even in limited ways, produced noticeable improvement in the use of the instructed strategies, albeit with only modest improvement on standardized reading tests (Rosenshine & Meister, 1994). More intensive instruction and modeling have been more successful in improving reading and standardized test scores (Bereiter & Bird, 1985; Block, 1993; Brown et al., 1996).

Many of the studies involve teaching one group of students a particular cognitive strategy to use while reading. These studies show that readers can learn a strategy and use it effectively in improving their comprehension. Reading, however, requires the coordinated and flexible use of several different kinds of strategies. Considerable success has been found in improving comprehension by instructing students on the use of more than one strategy during the course of reading. Skilled reading involves an ongoing adaptation of multiple cognitive processes. Becoming an independent, self-regulated, thinking reader is a goal that can be achieved through instruction of text comprehension (Brown et al., 1996).

How well has the knowledge gleaned from research filtered into the classroom to impact teachers actual practice? In spite of apparent effectiveness, teachers may not be using effective comprehension instruction strategies without having themselves had preparation in instruction (Anderson, 1992; Bramlett, 1994; Brown, 1996; Duffy, 1993; Durkin, 1979; Pressley, Johnson, Symons, McGoldrick, & Kurita, 1989; Pressley, 1998; Reutzel and Cooter, 1988)

Durkin (1981) observed that when comprehension skill instruction is present, in many classrooms teachers appear to be "mentioning "a skill to students and "assigning "it to them rather than employing the effective instruction modeling and transactional practices that research supports (Durkin, 1981; Reutzel & Cotter, 1988). In general, students were provided with opportunities to practice comprehension strategies, but were not actually taught the strategies themselves nor the utility value of applying them (Pressley, 1998, p. 198).

Who are the students who have serious problems in comprehension strategies?
They are the students who struggle with most aspects of their schooling. Their problems are usually not confined to reading. They do not follow instructions. They have a poor memory for information. They struggle to repeat sentences. They don't understand or employ logic in arguments. Their vocabulary is limited. Motivation is not their strength.

Does a given child have only a decoding problem, or is his decoding ability actually commensurate with his other language skills? That is, he may have comprehension problems generally.
Stanovich (1988) describes the *dyslexic* child as one with a severe phonological problem, but (initially at least) no other language difficulties. He contrasts this child with the *garden variety* reading-problem student, who shares the phonological problem (though perhaps to a lesser extent) with his *dyslexic* colleague, but who also has other language difficulties, such as language comprehension, vocabulary, short-term memory, or attentional problems. The rationale for making such a discrimination revolves around the instructional decisions that need to be made consequent upon the assessment.

For the *dyslexic* child, there is considerable consensus in the research community that the deficit lies in the area of phonological processing (Elbro, Nielsen, & Petersen, 1994; Yap & Van Der Leij, 1993), and that the intervention focus needs to be at the level of word decoding. Consistent with research findings (Adams, 1990), our best RMIT Clinic results have come from reading programs that have a strong phonic emphasis and involve explicit instruction (Foorman, 1995; Perfetti, 1992) - such as the Corrective Reading Program - Decoding strand. The *garden variety* reading problem is also addressable by the same program, at least at the decoding level. This is a valuable intervention to introduce, as the increased facility for decoding reduces the attentional requirements

needed at the level of print-decoding, thus freeing up valuable attentional capacity for the task of comprehension. However, this group of students may also need assistance with the comprehension of what they decoded, and additional intervention should be considered simultaneously with, or perhaps after, the decoding program. The Corrective Reading Program - Comprehension strand is a program that has been successfully used in primary and secondary settings and by parents (Clunies-Ross, 1990; Noon & Maggs, 1980) for this purpose.

The deceptively simple way to discriminate between these two (*dyslexic* and *garden variety*) groups of students is to compare their attainment on a reading comprehension task to that on a listening comprehension task. The Brigance Comprehensive Inventory Of Basic Skills has the capacity to provide such a comparison, with its reading comprehension and listening comprehension subtests (up to Year 9). This technique is now considered by many researchers as the most appropriate method of discriminating these two groups since the discrepancy-defined dyslexia model has fallen from favour in recent times. In this previous approach, dyslexia was assessed by the presence of a discrepancy between a child's intelligence and his reading attainment. However, it is now increasingly recognized that intelligence is far from perfectly correlated with reading. Stanovich (1992) calculated a median correlation of 0.34 across 14 studies involving 26 measures whose correlations ranged from 0.10 to 0.66. The range of correlations relate to the choice of intellectual and reading tests. The lower figures are more likely when the reading measure has a strong word-decoding emphasis, and the higher figures when comprehension is the major focus. Given this only moderate correlation, any discrepancy may be more reasonably considered a normal statistical variation than a specific neurological deficit. More recently, the Spadafore Diagnostic Reading Test (1983) has been employed in the RMIT Clinic, as it is normed to Year 12.

Further, it is noted that the development of literacy is closely intertwined with the development of intelligence (Stanovich, 1993). That is, the continued normal development of intelligence may rely on an adequate volume of reading. This assertion may be difficult to accept, but vocabulary development and higher-order comprehension skills are best advanced through reading (Nagy & Anderson, 1984) once the beginning stages are passed. Thus, as children with reading difficulties grow older, their lack of reading could be expected to reduce the initial gap between intelligence and attainment. That is, over time, dyslexic students measured intelligence may come to more closely resemble that of their garden-variety colleagues, as problems additional to the phonological core develop (Stanovich, 1988a). Sadly, the intelligent under-achiever may appear to become less intelligent because of our educational system's failure to adequately address his needs at the critical early stage.

The other major problem with discrepancy-defined dyslexia is that a different group (between 2%-35% of the population) is described by different intelligence tests, and through different subtest-analysis. For example, there has been debate over whether verbal or performance (or both) scales should be used - the use of one over the other certainly defines a different group as dyslexic. There is also disagreement over how large a discrepancy (eg 1, 1.66, or 2 SD) is needed for a diagnosis of dyslexia; over the minimum intelligence level needed for a dyslexia classification; and, over the type of reading test chosen to define the reading deficit. Given the slippery nature of such assessment choices, it is unsurprising that such a model is falling from favour, although it still has currency in some educational circles.

Comparing the results of listening comprehension to reading comprehension also makes intuitive sense, because listening comprehension tasks are much more closely related to reading than are the more global tasks involved in intellectual assessment. It offers the capacity to define those children who have a major problem only at the level of print. They will perform well on the listening comprehension tasks, using their impressive general language skills to answer questions about a story read to them. On the reading comprehension task however, they will do relatively poorly as their under-developed decoding skills prevent them bringing into play their well-developed general language skills. When required to decode a passage unassisted, they struggle, as did their garden-variety peers. On the other hand, the garden-variety students would be expected to perform similarly on both tasks. Their reading problems are general rather than specific, and they may not have any particular reading subskill restricting their development. Their decoding skill is commensurate with their other language skills, such that if they know the meaning of a word (or phrase, or sentence), they can comprehend it whether it is presented orally or in print. The consequence for the high LC (listening comprehension)-low RC (reading comprehension) child should be intensive assistance at the decoding level. For the low LC-Low RC child, intensive assistance at both the decoding and comprehension levels is indicated.

Other possible outcomes are high LC-high RC, a result predictable from an all-round good reader; and low LC-high RC, a rare result, possibly from a student with acute attentional, hearing, or short-term memory problems. In this case, the permanence of text would allow the student to use his intact language comprehension skills, whereas the ephemeral nature of the spoken story precludes such access. Hyperlexic students (a rare sub-group with excellent word recognition, but poor reading comprehension) would not be detected by this discrepancy analysis, because their listening comprehension parallels their reading comprehension (Sparks, 1995).

This LC-RC discrepancy represents an alternative definition of the group known as dyslexic; however, as with the IQ discrepancy-defined dyslexic, an issue is how great a discrepancy should be considered significant. Some (including the RMIT Clinic) have considered two years to be very significant (Anderson, 1991) given the extent of commonality of the tasks; although this is clearly an arbitrary figure, its significance being higher the younger the age of the child. As the term dyslexia is unlikely to disappear (at least in the short term), and parents almost always ask questions about it, the Clinic policy is to make use of the listening comprehension-reading comprehension discrepancy in discussions with parents. This is its major value since the techniques employed include systematic phonics whether the difficulty is described as dyslexic or garden-variety. The dyslexic classification does, however sensitize clinicians to the possibility that dyslexic students may be more treatment-resistant (Berninger & Abbott, 1994) than garden-variety students, and some may also require additional direct phonemic awareness instruction if they do not make early and sustained progress with a systematic phonics program.

How do we go about teaching comprehension separately?

Is it right to separate comprehension from decoding?
In Gough's view states reading has two components: decoding and linguistic comprehension. Poor readers are either poor in decoding, poor in linguistic ability, or poor in both. It is called the Simple View of reading and reading disability (Gough & Tunmer, 1986) and has received much support in both reading development theory and in research into instruction.

The following principle was distilled from the findings of more than 30 years of research studies under two very expensive federally funded programs: the $1 billion Project Follow Through Study, and the $200 million in studies conducted under the direction of the National Institute of Child Health and Human Development (NICHD).
"Teach decoding and comprehension skills separately until reading becomes fluent.
Both instructional activities should occur, but decoding and comprehension instruction should be taught separately while students are still learning to decode. Comprehension skills learned through teacher-read literature can be applied to students' own reading once they become fluent decoders."

Beyond decoding, the reader must: **Activate relevant background knowledge; Employ comprehension strategies (summarizing, predicting, clarifying, questioning); Apply critical thinking; Know what words mean.**

The Corrective Reading Comprehension strand is a viable program for these students
For students who read without understanding, the Corrective Reading Comprehension programs develop *vocabulary, information*, and *comprehension* strategies needed for academic success.

Who are the students who lack comprehension skills?
- They do not understand the language concepts (vocabulary, common facts, and grammar) underlying much of the material being taught in classrooms.
- They don't retain information that is presented to them
  1. can't repeat sentences they hear
  2. difficulty in following oral instructions
- They read passively

- They have trouble with deductions
- They are not able to work independently
- They are unmotivated

This program helps underachieving readers develop higher-order thinking and reasoning tactics used by successful readers—applying prior knowledge, making inferences, and analyzing evidence.

Placement test at: http://www.sraonline.com/index.php/home/curriculumsolutions/di/correctivereading/placetestcomp/664

Lessons incorporate information from science, social studies, and other content areas to build general knowledge and develop study skills.

Level A: Thinking Basics (65 lessons) teaches basic reasoning skills that form the framework for learning information. It also fills crucial gaps in students' background knowledge.
Students who place in **Comprehension A**
- do not understand the concepts underlying much of the material being taught in classrooms.
- do not have well-developed recitation skills.
- cannot repeat sentences they hear, so they have trouble retaining and answering questions about information that is presented.
- don't even understand the material when it is presented orally.

Level B: Comprehension Skills (B1, 60 lessons; B2, 65 lessons) teaches literal and inferential comprehension strategies.
Students who place in **Comprehension B**
- lack some common basic information, such as how many months are in a year.
- deficient in thinking operations, though more advanced than Level A
- make about fifteen errors on the Placement Test.
- miss the difficult statement-repetition items and some of the information items.
- trouble identifying how things are the same,
- have trouble with the deductions that involve "maybe."

Level C: Concept Applications (140 lessons) teaches students to use thinking skills independently.
Students who place in **Comprehension C**
- can draw deductions, make inferences, and respond to specific instructions.
- do not yet have a facility for working independently

The *Corrective Reading* programs are available from McGraw Hill. Ph. 9836 7061. The contacts in NSW are Betty Ratcliffe 0411 599 820, and Cally Moores 0411 599 934; in QLD Leona Greer, 0411 599 927

Training is available from Claire Scott, Training Enhancement for Schools, Teachers and Students (TESTS), 9889 3527

Some issues for schools in the implementation of Corrective Reading
Establishing DI programs
At the secondary level, students are often assessed in their final year of primary school and those considered at risk (i.e., are expected to have difficulty with secondary text books) are offered assistance through the Reading Program in place of their English Program or their LOTE program, or simply every day for period X regardless of what the timetable indicates. For other subjects they are part of the regular program. There are costs and benefits to each approach. However careful evaluations of the Corrective Reading program over the years have consistently demonstrated the success of the approach. The evaluations often includes formal pre and post testing, parent questionnaires and teacher comments. It has been generally accepted by school communities that the benefits have outweighed the costs.

After the initial whole class screen (often with a group test like the Progressive Achievement Test, ACER), those seen as at risk are provided with the Corrective Reading program Placement Test Decoding: http://www.sraonline.com/index.php/home/curriculumsolutions/di/correctivereading/placetestdecoding/663

For any given student, the possible outcomes of such assessments are:
1. the student's current decoding skill levels are below those of the lowest level of the program (Level A), and would be best addressed with a beginning reading program, such as "The *Teach Your Child to Read in 100 Easy Lessons* program available from the RMIT, Bundoora bookshop. Phone (03) 9925 7237. More information is available from one of the author's webpage at http://www.startreading.com.
2. the student is appropriate for placement in one of the four program levels, or
3. the student has already mastered the decoding skills taught at the upper level, and any reading deficits are probably not in the area of decoding.

The average reading lag of students coming arriving at secondary school with reading problems is about 3 years and it is unlikely that will they have independence after completing Level B – though it does allow them to (a) more readily decode unfamiliar words than previously and (b) develop good automatic recognition of irregular words. One of the desired outcomes of Level C is improved ability to manage texts from other subjects, and to cope with the large number of irregular and technical words they are increasingly required to address.

It should be remembered that the Decoding B & C programs focus primarily on students who have lacked word attack skills - who have read so haltingly and so inaccurately that they were prevented from comprehending what they read. While their word attack skills after Level C would then be adequate for comprehension, many of the students still lack basic word knowledge and so may not show good comprehension of orally presented or written material. They are then in a position to improve in those areas through the regular English program, through encouragement for them to read a wide range of literature (from trucking magazines to classics) and through an awareness by subject teachers that these students continue to have needs in the area of comprehension, spelling, syntax, and expressive writing skills.

Where to for these students?

An issue for schools is whether to continue upon completion of one program level for any given group. Some schools consider that all needy children should have an opportunity to participate; whereas, others prefer to follow the same cohort through several levels. The issue is a vexed one when resources are insufficient to meet the longer term needs of all the students. Felton (1993) made the point that, for disabled learners, several years of Direct Instruction may be necessary before they are able to make adequate progress in reading without requiring additional educational assistance. This is particularly so for secondary students who have a long history of failure, and whose reading problems have impaired their vocabulary development compared to that of their peers.

One measure which may assist schools in determining which students should be in the *continuers* group involves consideration of reading volume. The students who participate in the program are likely to have done much less reading than their more facile peers, and evidence as to any increase in the volume of reading undertaken by the students may be valuable. Stanovich (1986) pointed to the effect of volume of reading on reading progress, and it may be that a mediating variable between program conclusion and the need for further intervention resides in the amount of reading subsequently performed. The likelihood of students reverting to poor reading strategies is unknown, but is a hazard when an intervention does not include a longitudinal component. It is possible for students to develop strong word attack strategies and to make progress in reading generally, but for such skills to have little or no impact on day to day reading, or to lose its impact after program completion.

It is for this reason that the continuous within-program tests of rate and accuracy should be important elements in the overall evaluation of program success. There are clear behavioural objectives to be achieved by the end of the program. For example, by the end of Level A students are expected to be reading the daily stories and regular mastery tests at a rate of 60 words per minute at a specified error rate, and for Level B1, 90 words per minute. It is not possible to meet those speed and accuracy criteria if the reader adopts contextual cues, partial word cues, or word shape analysis strategies. Thus, the program does prompt the practice of effective reading strategies. These may be strengthened by within-school and home-based programs designed to promote and monitor increased reading volume in the post-program period. Regular subsequent assessment could be used to

ascertain the degree to which student progress in reading can be achieved independently for any given student. Some students may have reached the independence level (self-teaching) described by Share (1995); whereas the progress of other students may stall, indicating the need for a further program level.

At last count there were more than 350 schools in Victoria having one or more Direct Instruction programs in reading, spelling, language, maths, and writing. Of these, about 60 are secondary schools, and about 100 Catholic. Whilst most schools continue the programs' usage because of their excellent results it is also pleasing to note that there is a wider body of research evidence to support their usage.

What are the limits of instructional influence on progress?

The instructional emphasis expressed in the Corrective Reading program does not preclude the acknowledgement that causes of failure can reside within the individual, but allows for the possibility of resolving problems by manipulating instruction regardless of the source of the difficulty. There are a number of elements within the Direct Instruction programs that may have the effect of enhancing student progress. For example, the within-program attention to student responses allows for the identification of difficulties at the time they occur, rather than at the program's conclusion.

In particular, the program requirements for repeating tasks until mastery is achieved, of monitoring each student's responses and their daily rate and accuracy checks - should be examined when considering any student's failure to progress. The mastery tests provided for the program (usually at mid-point and conclusion) also provide a safeguard against a student's failure remaining unobserved throughout the program. Even motivational/attentional variations are addressable through the incentive program integral to the *Corrective Reading* program.

There are several safeguards against failure addressed by the program. One involves information provided to teachers on how best to react to any incorrect student responses detected during the lesson. There are clear scripted correction procedures specific to different tasks, designed to redirect students to the appropriate response. It typically involves an instantaneous correction sequence in which the teacher models the correct response, leads the student through the correct response, and finally tests the student for the correct response.

Teachers are exhorted at the conclusion of most teaching routines to *repeat until firm.* This is designed to provide additional practice when errors are noted, the practice intended to reduce error incidence in the future. If errors are continually made by the same one or two students, the teacher is faced with a dilemma - to slow the pace of the lesson, provide more practice of each task for the entire class, or, to continue at the pace comfortable to most of the class, and hope that the stragglers at least derive some benefit.

A more humane, though resource expensive option is to coopt an aide or parent volunteer to pre-teach each lesson prior to the regular group lesson. This allows for individually appropriate pacing, tailored to the student's need, and allows the student to continue a rate of progress in concert with his peers during the group session. Usually this double-teaming has the effect of supporting the student in the critical early stages of foundation skill development, improving the student's adaptation to the program structure, and increasing the student's confidence to respond with the group. In the author's experience a short burst of this added assistance allows for successful return to reliance on the group instruction alone.

Another instructional decision point occurs when most of the group makes an incorrect response. In this case, the teacher should examine instructional variables. Some of the candidates could be faulty (perhaps ambiguous) presentation, overly rapid lesson pacing, and, the presence or absence of pre-skills necessary for correct responding during the current task.

What is program fidelity?

The major issue arising from the above discussion is the emphasis on instructional considerations in any attempts to increase the breadth of a program's success. Both the early detection of problems (monitoring) and the planned response to detected problems should be critical foci in such attempts. As the *Corrective Reading* program was carefully designed to allow continuous monitoring of student progress, a failure to present the

curriculum in the prescribed manner (if the deviations are deleterious) should become readily apparent. Some of the deviations noted by the author in schools merely comprise unnecessarily verbose explanations, or interesting but largely irrelevant excursions into other topics. These minor deviations may detract from the elegance of the design, thus reducing efficiency, but they are unlikely to jeopardise outcomes for students.

Other departures from the prescribed program such as omitting some elements, for example, individual turn-taking, or specific exercises or tasks, may have a significant effect on the average group progress (if the departures are severe). Alternatively, the modifications may interfere with the progress of some (probably the most vulnerable) students, for it is the most vulnerable students who adapt least easily to ambiguous or incomplete instructional sequences. The early detection of difficulties in any given student is critical to the achievement of broadband success.

The program designers argue that the *Corrective Reading* program is an individual program, but presented in a group format. For this efficiency to succeed, the teacher must observe each student's responses by first ensuring that choral responding is precise, thus enabling the detection and teacher correction of incorrect responses. The teacher also requires well-developed powers of observation to systematically attend to each response of each student. The extent to which teachers can do this successfully depends upon several factors, such as hearing acuity, ability and determination to ensure their students achieve truly choral responding, and the group size. The teachers' manuals recommend group sizes of 15 or less. In the author's experience, inexperienced Direct Instruction teachers should reduce the number to below 10 until they become more skilled. The vigilance provided by teachers in attending to student responses is a major defence against any student's failure in the program. Given that there can be students who do not progress as hoped, this may be an area in which additional training and monitoring of teachers should be a priority.

Several elements of program fidelity appear critical. In a cumulative curriculum, it is essential that all tasks are mastered if students (especially the vulnerable) are to make progress. The in-built continuous progress evaluation is valuable in detecting quickly individual or group difficulty at any point. It is through these program features that problems of progress resistance can be addressed, and hence students spared the fate of participating in an ineffectual educational process.

In the long term, it may be that individual programming, enabling appropriate and immediate response to student difficulty, can more precisely be delivered through the use of computer-based interactive videodisc in conjunction with voice recognition software. In such a scheme, variations in student learning rates could be effectively and efficiently compensated for through differential presentation rates, error correction, and massed and spaced practice. Student responses could then determine the lesson structure that would, in turn, be capable of adjustment as the needs of the student alter.

Other program characteristics and effectiveness
There is a consensus that the earlier the intervention for at-risk learners the more rapid and widespread is the success; however, in secondary schools, the students have already experienced some years of reading failure, and the habit of employing ineffective strategies for reading is firmly ingrained. The effects of resistance born of failure can form obstacles to progress at least as difficult to overcome as the original source of the reading difficulty. For this reason, the *Corrective Reading* program includes a motivational system based on assigning points for maintaining speed and error limits. Teachers' comments suggest that this element of the program should not be underestimated in making judgements about which are the program's most effective elements. Numerous positive comments have been made about the student enjoyment and increased on-task behaviour attributable to the points system. Additionally, the system has helped to *capture* the cooperation of many students initially negative about being involved in the program.

One difficulty evident in much of the reading research involves ensuring students transfer their newly developed knowledge and skills to the task of everyday reading. For this to occur, the students need to notice that the new strategies are superior to the old

An element contributing to the impressive gains no doubt involves the time and intensity of the intervention. Longer interventions allow for greater content coverage and adequate practice, though of course there is no guarantee that all intervention designs specifically incorporate such effective teaching characteristics. Program intensity involves a combination of lesson length, lesson density, and lesson frequency. Lesson length for the *Corrective Reading* program is about 40 minutes. This period allows for a reasonable content coverage in each session and for the integration of new knowledge into the existing structure. As the programs involve a cumulative sub-skills approach to reading comprehension - the introduction of new skills, the practice of recently acquired skills and the amalgamation of these with the already-established core - requires careful lesson planning and sufficient time for this amalgamation to occur.

Program density involves the extent to which students are actively engaged in learning during the lesson time. Various concepts such as time on task, academic engaged time, and academic learning time have been employed to address the issue of student engagement. An observational study by Allington, Stuetzel, Shake, and Lamarche (1986) noted that typically only about one third of the time allocated to remedial reading instruction was actually spent in direct reading activities, the rest consumed by management issues, waiting, transition, and absence from the room. One way of promoting student engagement is to plan for overt responses. When students are producing overt responses it is apparent that students are participating, and their learning can be monitored. The additional advantage of overt responses involves the opportunity to provide corrective feedback.

Another element of lesson density involves the proportion of correct to incorrect responses. Students who struggle with reading require high rates of success if they are to adopt new strategies, transfer new skills across tasks, and persevere with the new strategies. Teachers in this study have commented on the high success rates achieved daily through careful lesson design, and student placement at the appropriate program level. The author has counted 300 responses from a student in a 10 minute word attack segment of a *Corrective Reading* program lesson. This represents a very high intensity of participation; additionally, the success rate was very high, above 90%.

Lesson frequency appears to be important, perhaps because of the need for spaced practice of newly mastered skills. It has been noted that students, particularly those at-risk, readily forget what they have learned when lesson frequency is too low. If this occurs, additional time is spent in relearning rather than in incorporation activities. Frustration and disengagement are the possible negative outcome of under-scheduling. The program guidelines recommend five lessons per week, although this may not achieved by all schools. Most schools allow for five sessions per week, but almost inevitably other priorities intrude. These usually involve activities such as school swimming programs and other sports, visiting guests and excursions. Often a period of school holidays (either 2 or 6 weeks) interrupts the lesson sequence. The effect of variable frequency impacts most notably on the students most at-risk. They are the students most likely to lose hard-won gains through forgetting.

The total contact hours are also relevant. Each level of the *Corrective Reading* program entails about 50 hours of instruction.

Program fidelity: Teacher training
The Direct Instruction model as explicated in the massive Follow Through experiment paid significant attention to the issue of fidelity of implementation. The designers' examination of implementation research had found moderate to high correlations between student outcome and degree of adherence to prescribed procedures (Engelmann, Becker, Carnine, & Gersten, 1988). The training program for their teachers involved several elements: presenting the rationale, demonstrating technique, providing practice and feedback in response to teacher performance, and, observing real classes - weekly for the first four months, then fortnightly. That process may take a year overall, with the level of complexity of the skills to be introduced increasing over that period. In examining the training modules it is evident that the model of teacher training adopted by the designers involves the same direct instruction principles as underlie the student skill development programs.

In the design of the delivery system, the focus was on those teacher behaviours that resulted in optimum student achievement. This concern for detail mirrored the designers' approach to field testing instructional routines also. In that process, theoretical principles of instructional design drove the initial development of content, but it was

multiple-setting field testing that determined the final design. For example, the *Corrective Reading* program (*Level B Decoding*) underwent nine revisions before publication (Hanner & Engelmann, 1984).

Engelmann (1988) argues that the average teacher would need to practise an exercise in a reading program at least a dozen times before the fluent orchestration of component presentation and correction skills is attained. These skills involve comfortable and facile use of the specified teacher wording, using lesson pacing appropriate to the example and to the student group, using signals in an unambiguous and natural manner, and providing adequate (but not excessive) reinforcement. In his view, this practice and associated feedback should not take place in the classroom but in less complex settings such as "dummy" runs with colleagues, etc. Such practice is considered important as a beneficial precursor (though not sufficient) to the transfer of training to the real world of the classroom.

Engelmann's experience has been that, without safeguards, less than 30% of the skills practised (outside the classroom) will be evident subsequently in classrooms. Thus, the provision of in vivo coaching was found to be especially important for the acquisition of skill. This is unsurprising given the increased salience of observing a model performance in one's own classroom. Glang and Gersten (1987) commented on the value for teachers in seeing how their own students responded to the expert instructional techniques presented by the visiting supervisor. Unfortunately, this level of support is rarely available in our educational settings.

Within program controls
In most schools, it has not been possible to provide the intensity and duration of teacher-training recommended by the authors. It has been noted in other studies that program fidelity can be a major contributor to the success or otherwise of an intervention. Schneider, Kuspert, Ruth, Vise, and Marx (1997) found that whilst differences in focus and duration (time allotted daily and overall program length) had a significant effect on outcome; so did the degree of pre-program and within-program teacher training have a significant influence on the degree of success experienced by students.

A major difference in implementing the Corrective Reading program compared to most experimenter-developed curricula involves the extent of within-program control of curriculum and delivery. The programs used in this study are very prescriptive - the teacher making few judgements about curriculum issues. The content and delivery are scripted, and the teachers' role is relatively transparent. The teachers' skill revolves around classroom management, task presentation, and response monitoring (making decisions about the degree of repetition needed, or the need for error correction).

Thus, one source of variation in "loose" programs may involve limitations due to the under-developed teaching abilities of some teachers. Another source in programs that provide only general lesson plans (or even less structured, topic areas) is the variation in the manner in which different teachers may choose to present the curriculum - the degree of teacher directed vs. self directed learning, the amount of massed and spaced practice, and the error correction opportunities, for example. Such variables are known to impact on student outcomes, and variation at this level can be confounded with the effects of program content.

The level of prescription in the Direct Instruction programs is valuable in reducing, though not eliminating, teacher differences. It has been noted that there is usually reasonable consistency of results across different schools in the sense that the effects tend to be described as large by most schools. This suggests that the designers' intent of reducing the impact of teacher differences has been achieved to some extent. This is a non-trivial finding as the requirement of training in some programs has been a significant added cost to be considered in conjunction with program effectiveness. For example, in the Foorman et al. (1997) studies, teacher training involved between 30 and 90 hours initially, and subsequent twice monthly lesson observation.

It is possible that an increased level of initial training and subsequent monitoring of teacher presentation skills can increase student achievement levels. It is also possible that as teachers become more experienced their effectiveness increases. However, the reported improvements evoked by teachers who are inexperienced in the program are educationally and educationally significant at the current low levels of support, an important finding in the real world of inadequate funding. Pressley and Beard El-Dinary (1997) make the point that designers

cannot afford to be too precious when their excellent results are not replicated because schools fail to exactly duplicate the procedures used in the evaluation studies. An important question for any program being considered by a school is the degree to which it is robust to changes in its content or delivery across a range of settings.

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My Wishlist
1. Early screening and identification of beginning or late kinder students
2. Teach phonemic awareness informally in Kindergarten (or preschool)
3. Provide intensive phonemic awareness teaching to those not progressing
4. Adopt a phonics-first emphasis to reading instruction – providing small group assistance to those slow to progress
5. Assess all students in school (primary and secondary) with mass screening, e.g., Progressive Achievement Comprehension Test (ACER)
6. Provide daily reading instruction for struggling students from Year 3 to secondary school with the appropriate level of the Corrective Reading program

A Blueprint For A Multi-Level Approach To Literacy
Become involved in language activities with the families of children prior to school
Provide a cascading level of support to parents of young children – from informal tip sheets to one-on-one interventions.
Schools liaise with feeder kindergartens to enable dovetailing of objectives and programs
Include phonemic awareness activities in kindergarten programs
Make contact with the parents of struggling readers before the younger siblings arrive
Screen all students prior to school entry on phonemic awareness and letter sounds/names.
Make literacy the school's highest priority
Involve all available resources – teachers, parents, volunteers, retirees, grandparents
Include research-supported instruction in beginning reading in Prep grade – emphasise phonemic awareness and phonics outside of the literature segments of the literacy program.
Separate comprehension skills and decoding in the early stages of reading development
Teach students the metacognitive comprehension skills of reading.
Teach students organisational skills explicitly
Assess student progress continuously, and respond rapidly and intensively to early signs of failure
Develop a Frameworks document that reflects all these features
Principals provide leadership on professional development of teachers
Teacher training institutions to alter their approach to literacy to better reflect current knowledge of reading development and instruction.

Armbruster, B.B., & Osborn, J. (2001). *Put reading first: The research building blocks for teaching children to read*. Center for the Improvement of Early Reading Achievement. [On-Line]. Available: http://www.nifl.gov/nifl/research/reading_first1.html

The RMIT Psychology Clinic
The RMIT Psychology Clinic provides assessment and training to parents wishing to supplement the reading instruction supplied by their child's school. Telephone 99257722 or 9252376 or write to The Co-ordinator, RMIT Psychology Clinic, Plenty Road Bundoora 3083

Typical Clinic Sequence (Cost currently $60/ 1 hr session)
Session 1: Initial Interview
(a) Relevant information
(b) Clinic's role
(c) Agreement about what's possible
(d) Intervention responsibility
Session 2: Intellectual assessment
Session 3: Assessment of reading/other educational skills
Session 4: Discussion of the written report
Sessions 5+: Reading intervention training; monitoring of progress weekly by phone
Later sessions: Mid and post-program testing; new programs selected

The Direct Instruction programs employed in the *RMIT Psychology Clinic* combine phonics and phonemic awareness instruction. Referrals may be made by clients or professionals by ringing 9925 7722 on Tuesday mornings or Friday mornings. Training for the parents to use these programs with their children is provided as appropriate. The programs are loaned to the parents.

The *Teach Your Child to Read in 100 Easy Lessons* program can be purchased from the RMIT, Bundoora bookshop. Phone (03) 9925 7237. More information is available from one of the author's webpage at http://www.startreading.com

Programs regularly used in the RMIT Psychology Clinic

Dixon, R. (1976). *Morphographic Spelling*. Chicago: Science Research Associates.

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Corrective Reading program: Decoding Placement Test

Preparation: Reproduce one copy of the test for each student and each tester.

Administration: Select a quiet place to administer the test. Students who are to be tested later should not observe or hear another student being tested. You will need a test form for each student and a stopwatch or a watch with a second hand. When administering the test, sit across from the student. Position the test form so that the student cannot see what you are writing on the form. Fill out the top lines of the test form (student information). Keep this filled-out test form and hand the student a clean copy of the test.

PART 1 (113 words)

Tell the student *"Read this story out loud. Follow along with your finger so you don't lose your place. Read carefully"*. Begin timing as soon as the student begins reading the first sentence.

    Record each decoding mistake the student makes in oral reading.

    Mark an X on the filled-out form to show where the student made each mistake.

    If the student **omits** a word, mark an X above the omitted word.

    If the student **adds** a word that does not appear in the story, mark an X between two words to show where the word had been added.

    If the student **misidentifies** a word, mark an X above the misidentified word. **Do not count the same misidentified** word more than once. (For example, if the student misidentified the name "Hurn" four times, count only 1 error.)

    If the student **cannot identify** a word within **3** seconds, say the word and mark an X above it.

    If the student makes a mistake and then **self-corrects** by saying the correct word, mark an X above the word.

    If the student sounds-out **a word but does not pronounce it at a normal speaking rate, ask What word? If the student does not identify it, mark an X above the word.**

    Do not count the **re-reading** of a word or phrase as an error if the word is read correctly both times.

After each of the word-identification errors, immediately **tell the student the correct word**.

When recording the errors, make sure that your copy of the story is not visible to the student. The student should not be able to see the marks that you're making. Stop timing as soon as the student completes the story. Enter the total errors for Part I on the appropriate line at the top of the filled-in test form. Also record the time required by the student to read Part I. Refer to the placement schedule for Part I to determine placement or whether you should administer another part of the test.

Part II
Part II is a series of sentences that are to be read aloud by the student. You **do not need to time** this part of the test. To administer, present the section labeled Part II and tell the student *"Read these sentences out loud. Follow along with your finger so you don't lose your place. Read carefully"*.
Record each decoding error the student makes while reading. When the student finishes reading Part II, enter the total errors for Part II on the appropriate line at the top of the test form. Then determine the student's placement by referring to the placement schedule for Part II. Fill in the "Placement" blank at the top of the test form.

Part III (152 words) & IV (201 words)
Each of these Part III and Part IV test sections is a passage that is to be read aloud by the student and **timed**. To administer, present the appropriate section and tell the student *"I'm going to time your reading of this selection. Read out loud and read carefully"*. **Record errors as specified for Part I**.
When the student finishes reading Part III, enter the total errors and time required at the top of the test form. Then refer to the placement schedule for Part III to determine placement or whether you should administer Part IV. When the student finishes reading Part IV, enter the total errors and time required at the top of the test form. Then determine the student's placement and fill in the "Placement" blank.

Decoding Placement Schedule

	ERRORS	TIME	PLACEMENT OR NEXT TEST
PART I	22 or more	__	Administer PART II Test
	12 to 21	more than 2:00	Level A, Lesson 1
	12 to 21	2:00 or less	Administer PART II Test
	0 to 11	more than 2:00	Level B1, Lesson 1
	0 to 11	2:00 or less	Administer PART III Test
PART II	41 or more		No *Corrective Reading* placement; use a beginning reading program
	8 to 40		Level A, Lesson 1
	0 to 7		Level B1 Lesson 1
PART III	15 or more		Level B1 Lesson 1
	6 to 15	more than 2:30	Level B1 Lesson 1
	6 to 15	2:30 or less	Level B2, Lesson 1
	0 to 5	more than 2:30	Level B1 Lesson 1
	0 to 5	2:30 or less	Administer PART IV Test
PART IV	9 or more		Level B2, Lesson 1
	4 to 8	more than 1:30	Level B2, Lesson 1
	4 to 8	1:30 or less	Level C, Lesson 1
	0 to 3	more than 1:20	Level C, Lesson 1
	0 to 3	1:20 or less	Doesn't need *Corrective Reading*

Part 1

Kit made a boat. She made the boat of tin. The nose of the boat was very thin. Kit said, "I think that this boat is ready for me to take on the lake." So Kit went to the lake with her boat. Her boat was a lot of fun. It went fast. But when she went to dock it at the boat ramp, she did not slow it down. And the thin nose of the boat cut a hole in the boat ramp. The man who sold gas at the boat ramp got mad. He said, "That boat cuts like a blade. Do not take the boat on this lake any more."

Part 2

Can she see if it is dim?
And it can fit in a hand.
Now the hat is on her pet pig.
I sent her a clock last week.
How will we get dinner on this ship?
The swimming class went well.
When they met, he felt happy.
Then she told me how happy she was.
The tracks led to a shack next to the hill.
They said, "We will plant the last of the seeds."
What will you get when you go to the store?
You left lots of things on her desk.

Part 3

Hurn was sleeping when it happened. Hurn didn't hear the big cat sneak into the cave that Hurn called his home. Suddenly Hurn was awake. Something told him, "Beware!" His eyes turned to the darkness near the mouth of the cave. Hurn felt the fur on the back of his neck stand up. His nose, like noses of all wolves, was very keen. It made him very happy when it smelled something good. But now it smelled something that made him afraid.

Hurn was five months old. He had never seen a big cat. He had seen clover and ferns and grass. He had even eaten rabbits. Hurn"s mother had come back with them after she had been out hunting. She had always come back. And Hurn had always been glad to see her. But now she was not in the cave.
Hurn's sister, Surt, was the only happy smell that reached Hurn's nose.

Part 4

During a good year, a large redwood will produce over six kilograms of seed, which is nearly a million and a half seeds. And the year that our redwood seed fluttered from the cone was an exceptionally good year. The parent tree produced over eight kilograms of seed that year, enough seed to start a forest that would be ten square kilometers in size. However, only a few redwood seeds survived. In fact, only three of the seeds from the parent tree survived their first year, and only one of them lived beyond the first year.

Obviously, our seed was lucky. It was a fortunate seed because it was fertile. If a seed is not fertile, it cannot grow, and about nine out of every ten redwood seeds are not fertile. Our seed also had the advantage of landing in a place where it could survive. If it had fallen on a part of the forest floor covered with thick, heavy litter, it probably would not have grown. If it had fluttered to a spot that became too dry during the summer, it would have died during the first year. Our seed landed in a spot where moles had been digging.

Corrective Reading program - Decoding B: Lesson 12
EXERCISE 1
- **PRONUNCIATION OF ENDINGS**

1. Print in a column on the chalkboard: **ed, s**.
2. (Point to **ed** and **s**.) You're going to say words with these endings.
3. Here's the first word: **talk.** (Point to **ed**.) Say (pause) **talk** with this ending. (Touch under **ed**) *Talked*. Yes, **talked.** (Point to **s**.) Now say (pause) **talk** with this ending. (Touch under **s**.) *Talks*. Yes, **talks.**
4. Next word. (Point to **ed**) Say (pause) **rob** with this ending. (Touch under **ed**) *Robbed*. Yes, **robbed.** (Point to **s**) Now say (pause) **rob** with this ending. (Touch under **s**) *Robs*. Yes, **robs.**
5. (Repeat step 4 for **pick.**)

Individual test

Call on individual students to read all the words in the column.

Correction Reminder: (Follow these steps to correct all word-identification errors during word-attack skills.)
1. The word is __.
2. What word? (Signal.)
3. Spell __. (Signal for each letter.) What word? (Signal.)
4. Go back to the first word in the (row/column). • What word? (Signal.)

EXERCISE 2
ENDINGS BUILDUP

1. Print in a column on the chalkboard: **yell, ask, lock, help.**
2. You're going to read these words. Then I'm going to change each word.
3. (Point to the beginning of **yell.** Pause.) What word? (Signal.) *Yell*. Yes, **yell.**
4. (Repeat step 3 for **ask, lock, help.**)

To correct word-identification errors: a. The word is ——. b. What word? (Signal.) c. Spell __. (Signal for each letter.) What word? (Signal.) d. Return to the first word in the column and present the words in order.
5. (Add **ed** to each word: **yelled, asked, locked, helped.**)
6. (Point to the beginning of **yelled.** Pause.) What word? (Signal.) *Yelled.* Yes, **yelled.**
7. (Repeat step 6 for **asked, locked, helped.**)
8. (Erase **ed** from each word. Repeat steps 3-7 until firm.)

EXERCISE 3
SOUND COMBINATION: oo
1. Open your Student Book to Lesson 12. Touch the letters o-o in part 1. •
oo too broom soon room
2. In many words, the letters o-o make the sound oo as in **too.** What sound? (Signal.) *oo.*
3. You're going to read words that have the sound oo. You're going to say the sound for the underlined part and then read the word.
4. First word. • What sound? (Signal.) *oo.* What word? (Signal.) *Too.*
5. Next word. • What sound? (Signal.) *oo.* What word? (Signal.) *Broom.*
6. (Repeat step 5 for each remaining word.)

WORD READING
EXERCISE 4
1. Touch the first word in part 2. •
began before begin
What word? (Signal.) *Began.*
2. Next word? • What word? (Signal.) *Before.*
3. (Repeat step 2 for **begin.)**

EXERCISE 5
WORD READING
1. Touch part 3. •
orders told pals next lift were they sweeping back trash help set think just
You're going to say the sound for the underlined part and then read the word.
2. First word. • What sound? (Signal.) *or.* What word? (Signal.) *Orders.*
3. Next word. • What sound? (Signal.) *ooolll.* What word? (Signal.) *Told.*
4. (Repeat step 3 for each remaining word.)
5. (Repeat steps 2-4 until firm.)

EXERCISE 6
• **DOUBLE CONSONANTS AND ENDINGS**
Task A
1. Find part 4. Touch the first word in column A. •

A	B	C
stopping	**robber**	**hopping**
runner	**sitting**	**robbed**
grinned	**dropped**	**stopper**

2. What word? (Signal.) *Stopping.*
3. Spell **stopping.** Get ready. (Signal for each letter.) What letter is doubled in **stopping?** (Signal.) *p.*
4. Next word. What word? (Signal.) *Runner.*
5. Spell **runner.** Get ready. (Signal for each letter.) What letter is doubled in runner? (Signal.) *n.*
6. Next word. What word? (Signal.) *Grinned.*
7. Spell **grinned.** Get ready. (Signal for each letter.) What letter is doubled in **grinned?** (Signal.) *n.*

Task B
1. Touch the first word in column B. • What word? (Signal.) *Robber.*

2. Spell **robber.** Get ready. (Signal for each letter.) What letter is doubled? (Signal.) *b.*
3. Next word. What word? (Signal.) *Sitting.*
4. Spell **sitting.** Get ready. (Signal for each letter.) What letter is doubled? (Signal.) *f.*
5. Next word. What word? (Signal.) *Dropped.*
6. Spell **dropped.** Get ready. (Signal for each letter.) What letter is doubled? (Signal.) *p.*

Task C
1. Touch the first word in column C. • What word? (Signal.) *Hopping.*
2. Spell **hopping.** Get ready. (Signal for each letter.) What letter is doubled? (Signal.) *p.*
3. Next word. What word? (Signal.) *Robbed.*
4. Spell **robbed.** Get ready. (Signal for each letter.) What letter is doubled? (Signal.) *b.*
5. Next word. What word? (Signal.) *Stopper.*
6. Spell **stopper.** Get ready. (Signal for each letter.) What letter is doubled? (Signal.) *p.*

EXERCISE 7
WORD READING
Task A   Irregular Words
1. Touch the first word in part 5. •

<u>one</u> <u>where</u> <u>there</u> <u>gave</u> <u>day</u> questions what to do woman of you have down give brown

2. That word is one. What word? (Signal.) *One.*
3. Spell one. (Signal for each letter.) What word? (Signal.) *One.*
4. Next word. • That word is **where.** What word? (Signal.) *Where.*
5. Spell **where.** (Signal for each letter.) What word? (Signal.) *Where.*
6. Next word. • That word is **there.** What word? (Signal.) *There.*
7. Spell **there.** (Signal for each letter.) What word? (Signal.) *There.*
8. Next word. • That word is **gave.** What word? (Signal.) *Gave.*
9. Spell **gave.** (Signal for each letter.) What word? (Signal.) *Gave.*
10. Next word. • That word is day. What word? (Signal.) *Day.*
11. Spell day. (Signal for each letter.) What word? (Signal.) *Day.*
Task B
1. This time you'll just read the words. Go back to the first word. • What word? (Signal.) *One.*
2. Next word. • What word? (Signal.) *Where.*
3. (Repeat step 2 for each remaining word.)

<u>**EXERCISE 8**</u>
WORD-ATTACK SKILLS: Individual Tests
Note: Criterion is 80 percent of rows and columns read without error.
1. There are 12 rows and columns. If we can read 10 of them without making a mistake, everybody in the group earns 5 points.
2. (Call on individual students. Each student reads a row or column. Tally the rows and columns read without error, if the group reads at least 10 rows and columns without making errors, direct all students to record 5 points in Box A of their Point Chart.)
3. (If the group did not read at least 10 rows and columns without errors, do not award any points for the Word-Attack Skills exercises.)

GROUP READING

EXERCISE 9
STORY READING
Task A
1. (Hold up a Student Book and point to the story in part 6.) You can earn points for each part of the story.

TIM AND HIS BIG SISTER

Tim's big sister did not ask questions. She gave orders. She told her dog what to do. She told her pals what to do. But when she told Tim what to do, he asked questions.
One day she said, "Gel a broom and sweep the room."
Then Tim asked, "Which broom and which room?"
His sister said, "The red broom. Get that broom. Then sweep this room."
Tim said, "Where is the red broom?"
His sister said, "It is next to the brown broom."
Do you know what Tim asked next?
Tim's sister said, "The brown broom is in the back room."
       [1]
Tim got the broom and began to sweep. Just then, his sister yelled, "Help me lift this trash can."
Tim asked, "How can I keep on sweeping and lift trash cans?"
His sister yelled, "Drop that red broom and help me."
Tim set the broom down and went to the trash can. He asked, "What is in that trash can?"
His sister got mad. She said, "What do you think is in the trash can?"
Tim said, "That is my question. If you ask questions, I will give orders."
He did just that. He told his sister what to do.
       [2]

2. (Point to the end of the first part.) The first part ends here. The number tells you that the part is worth 1 point. The second part goes to the end of the story. The number at the end of the story tells you the second part is worth 2 points.
3. Remember, you can earn points for reading each part without making more than 3 errors.
4.   (Call on a student to read the title.)
5.   (Call on individual students, each to read one or two sentences. Praise students who read without making errors.)
To correct word-identification errors: a. (As soon as a student misidentifies a word, say:) The word is ——. What word? b. Go back to the beginning of the sentence and read that sentence again.
6. At the end of each part of the story: a. (Tell the students the number of errors the group made and whether the group earned points for that part.) b. (Praise the group if they made no more than 3 errors.) c. (If the group made more than 3 errors, direct the group to re-read the part,)

Task B
1. I'll re-read the first part of the story and then ask you questions about that part.

2. (Read the first part of the story. Call on individual students to answer each question.)
a. Did Tim's sister usually ask questions? *No.*
b. What did she usually do? Idea: *Gave orders.*
c. How would you give an order to tell somebody to sweep the porch? Idea: Say,
"Sweep the porch."
d. What do you think Tim asked after his sister said, "The red broom is next to the brown broom?"
Idea: "*Where is the brown broom?"*
e. Where were the red broom and the brown broom? Idea: *In the back room.*

3. (Read the second part of the story. Call on individual students to answer each question.)
a. When Tim started sweeping, his sister ordered him to do something else. What? Idea: *Lift the trash can.*
b. His sister asked, "What do you think is in the trash can?" Is that giving an order or asking a question? *Asking a question.*
c. Tim said, "That's my question. If you ask questions, I'll" ... do what? *Give orders.*
d. What do you think he told his sister to do? (Accept reasonable responses.)

4. (After asking the comprehension questions for the second part, tell the students the total number of points to record in Box B of their Point Chart. Maximum = 3 points.)

EXERCISE 10
- **READING CHECKOUTS**

Task A
1. (For this part of the lesson, assigned pairs of students work together during the checkouts.)
2. Starting today, you're each going to do two reading checkouts. The first checkout is on the first part of story 12. If the reader makes no more than 2 errors, the reader earns 3 points. Do that checkout now. Remember to raise your hand when you've finished reading. Then the other person in the pair can read the first part of the story.
3. (Direct students who made no more than 2 errors to record 3 points in Box C-1 of their Point Chart.)

Task B Timed Reading
1. (After all students have completed their first reading checkout, say:) Now you will work in pairs and do a timed reading checkout. The timed checkout is on the first part of story 11. Don't read the title. Start with the first word of the story. You'll read for one minute.
2. For this checkout, I'll tell you when to start and when to stop. The reader keeps reading for the whole minute. The reader will try to read at least 55 words during the minute and make no more than 3 errors. The 55th word is underlined in the Student Book. Checkers will count errors.
3. First set of readers, get ready. • Go. (After one minute, say:) Stop.
4. Checkers, raise your hand if your reader made no more than 3 errors. (Direct checkers who raised their hand to count the number of words their reader read.)
5. (Direct students who read 55 words or more and made no more than 3 errors to record 3 points in Box C-2 of their Point Chart.)
6. (Direct students to plot their reading rate [words per minute] and number of errors on the Individual Reading Progress Chart on page 69 of their Workbook.)
7. (Repeat the procedure, steps 3-6, with the second member of each pair reading the first part of story 11.)

WORKBOOK EXERCISES

EXERCISE 11
WRITING LETTERS FOR SOUNDS
1. Open your Workbook to Lesson 12. • Find part 1. • You're going to write the letter or letters for each sound that I say.
2. First sound: **ing.** What sound (Signal.) *ing.* Write it.
3. Next sound: **oo.** What sound? (Signal.) *oo.* Write it.
4. (Repeat step 3 for lll, b, fff, eee, d, aaa, mmm, g.)

Individual test
(Call on a student.) Read the letters you wrote, starting with the first blank.

EXERCISE 12
COMPLETING WORDS
1. Touch the first line in part 2. • Spell the part. Get ready. (Signal for each letter.) *c-k.*
2. **Fix** it up to say **sock.** What word? (Signal.) *Sock.* Do it. (Check work and correct.)
3. Next line. • Spell the part. Get ready. (Signal for each letter.) *s-h.*
4. **Fix** it up to say **shelf.** What word? (Signal.) *shelf.* Do it. (Check work and correct.)
5. (Repeat steps 3 and 4 for **ck [black], tr [trash], ore [store].)**

EXERCISE 13
STORY PICTURE
1. Find part 4. • The picture shows something that happened in the story.

2. Touch item 1. • I'll read the item: **Tim got the broom and began to blank.** Write the word that goes in the blank. (Check work and correct.)

3. (Call on a student.) What word goes in the blank? *Sweep.* Yes, **sweep.**

4. Touch item 2- • I'll read: Make an X to show where he got the broom. Make an H on the thing Tim's sister told Tim to lift. Do it. (Check work and correct.)

1 . Complete your Workbook lesson. If you make no more than 4 errors, you earn 6 points.

2. (After checking the Workbooks, direct students who made no more than 4 errors to record 6 points in Box D of their Point Chart.)

Lesson Point Summary

Tell students to add the points in Boxes A, B, C-1, C-2, and D, plus any bonus points they have earned, and to write this number in the Total box of the Point Chart.

• **Point Schedule for Lesson 12**

Box Maximum Points

A Word Attack 5

B Story Reading 3

C-1 1st Reading Checkout (not timed) 3

C-2 2nd Reading Checkout (timed) 3

D Workbook 6

Bonus (maximum - 2) (2)

Total (maximum without bonus points) 20

---

1 oo   too   broom   soon   room

2. began   before   begin

3. orders   told   pals   next   lift
were   they   sweeping   back
trash   help   set   think   just

4

A	B	C
stopping	robber	hopping
runner	sitting	robbed
grinned	dropped	stopper

5'

one   where   there   gave   day
questions   what   to   do
woman   of   you   have   down
give   brown

---

6.   **Tim and His Big Sister**

Tim's big sister did not ask questions. She gave orders. She told her dog what to do. She told her pals what to do. But when she told Tim what to do, he asked questions.

One day she said, "Get a broom and sweep the room."

Then Tim asked, "Which broom and which room?"

<u>His</u> sister said, "The red broom. Get that broom. Then sweep this room."

Tim said, "Where is the red broom?"

His sister said, "It is next to the brown broom."

Do you know what Tim asked next?

Tim's sister said, "The brown broom is in the back room."

[1]

Tim got the broom and began to sweep. Just then, his sister yelled, "Help me lift this trash can."

Tim asked, "How can I keep on sweeping and lift trash cans?"

His sister yelled, "Drop that red broom and help me."

Tim set the broom down and went to the trash can. He asked, "What is in that trash can?"
His sister got mad. She said, "What do you think is in the trash can?"
Tim said, "That is my question. If you ask questions, I will give orders."
He did just that. He told his sister what to do.

[2]

LESSON 11

Tim Asked Questions

Tim asked a lot of questions. His dad told him to go to the store for milk. Tim asked, "Which store?"
When his mom told him to set the cups on the shelf, he asked, "Which shelf?"
His sister said, "Give me a hand."
Tim said, "Which hand?"
Last week, Tim was at a <u>ranch.</u> The rancher told him, "Get on a horse and go down that path."
Tim asked 2 questions. What questions do you think he asked?

[1]

The rancher told Tim to get on a black horse, and Tim did that. Then Tim went down the path and got to a creek.
He said, "How is this horse going to get over this creek?"
The horse showed him how. The horse jumped over the creek. But Tim fell into the creek when the horse jumped.
Tim sat in the middle of the creek and said to the horse. "I see how you got over the creek."
Then he asked a question. What do you think he asked?

[2]

THINKING OPERATIONS

EXERCISE 1
ANALOGIES
The first Thinking Operation is **Analogies.**
Task A
1. We're going to make up an **analogy.**
Everybody, what class are a horse and a frog in? (Signal.) *Animals. Yes, animals.*
2. We're going to make up an analogy that tells how those animals move. What's the analogy going to tell about those animals? (Signal.) *How those animals move.* Remember that.
3. What are some ways that a horse moves? (Call on individual students. Accept all reasonable answers.) Let's say our horse gallops.
4. What are some ways that a frog moves? (Call on individual students. Accept all reasonable answers.) Let's say our frog hops.
5. A horse gallops and a frog hops. Everybody, say the whole analogy. (Pause.) Get ready. (Signal.) *A horse is to galloping as a frog is to hopping.* (Repeat until firm.)
6. The analogy tells something about those animals. (Pause.) What does the analogy tell about those animals? (Signal.) *How those animals move.* (Repeat until firm.)
7. Everybody, say the analogy one more time. (Signal.) *A horse is to galloping as a frog is to hopping.*
8. (Repeat steps 6 and 7 until firm.)

TaskB
1. We're going to make up an **analogy.** Everybody, what class are a rooster and a lion in? (Signal.) *Animals.* Yes, animals.
2. We're going to make up an analogy that tells where you find those animals. What's the analogy going to tell about those animals? (Signal.) *Where you find those animals.* Remember that.
3. Where are some places you find a rooster? (Call on individual students. Accept all reasonable answers.) Let's say you find our rooster on a farm.

4. Where are some places you find a lion? (Call on individual students. Accept all reasonable answers.) Let's say you find our lion in a zoo.

5. You find a rooster on a farm and a lion in a zoo. Everybody, say the whole analogy. (Pause.) Get ready. (Signal.) *A rooster is to farm as a lion is to zoo.* (Repeat until firm.)

6. The analogy tells something about those animals. (Pause.) What does that analogy tell about those animals? (Signal.) *Where you find those animals.* (Repeat until firm.)

7. Everybody, say the analogy one more time. (Signal.) *A rooster is to farm as a lion is to zoo.*

8. (Repeat steps 6 and 7 until firm.)

EXERCISE 2
DEFINITIONS
The next Thinking Operation is **Definitions.**

1**. Destroy means wreck.**

2. What does **destroy** mean? (Signal.) *Wreck.* What word means **wreck?** (Signal.) *Destroy.* (Repeat step 2 until firm.)

3. Listen. The baby wrecked the toy. Say that. (Signal.) *The baby wrecked the toy.* (Repeat until firm.) Now say that sentence with a different word for **wrecked.** (Pause.) Get ready. (Signal.) *The baby destroyed the toy.* (Repeat until firm.) (Repeat step 3 until firm.)

4. Listen. His car was wrecked in the accident. Say that. (Signal.) *His car was wrecked in the accident.* (Repeat until firm.) Now say that sentence with a different word for **wrecked.** (Pause.) Get ready. (Signal.) *His car was destroyed in the accident.* (Repeat until firm.) (Repeat step 4 until firm.)

5. Listen. The storm destroyed the field. Say that. (Signal.) *The storm destroyed the field.* (Repeat until firm.) Now say that sentence with a different word for **destroyed.** (Pause.) Get ready. (Signal.) *The storm wrecked the field.* (Repeat until firm.) (Repeat step 5 until firm.)

EXERCISE 3
DEFINITIONS

1. A synonym for **fast is quick.**

2. What's a synonym for **fast?** (Signal.) *Quick.* And what's a synonym for **quick?** (Signal.) *Fast.* (Repeat step 2 until firm.)

3. Listen. His motorcycle is very fast. Say that. (Signal.) *His motorcycle is very fast* (Repeat until firm.) Now say that sentence with a synonym for **fast** (Pause.) Get ready. (Signal.) *His motorcycle is very quick.* (Repeat until firm.) (Repeat step 3 until firm.)

4. Listen. The horse was not quick. Say that. (Signal.) *The horse was not quick.* (Repeat until firm.) Now say that sentence with a synonym for **quick.** (Pause.) Get ready. (Signal.) *The horse was not fast.* (Repeat until firm.) (Repeat step 4 until firm.)

DEFINITIONS

1. Big. (Pause.) What's a synonym for **big?** (Signal.) *Large.* And what's a synonym for **large?** (Signal.) *Big.* (Repeat step 1 until firm.)

2. Listen. The moon looks very big tonight. Say that. (Signal.) *The moon looks very big tonight.* (Repeat until firm.) Now say that sentence with a synonym for big. (Pause.) Get ready. (Signal.) *The moon looks very large tonight.* (Repeat until firm.) (Repeat step 2 until firm.)

3. Duplicate. (Pause.) What's a synonym for **duplicate?** (Signal.) *Copy.* And what's a synonym for **copy?** (Signal.) *Duplicate.* (Repeat step 3 until firm.)

4. Listen. I can copy her writing. Say that. (Signal.) *I can copy her writing.* (Repeat until firm.) Now say that sentence with a synonym for **copy.** (Pause.) Get ready. (Signal.) *I can duplicate her writing.* (Repeat until firm.) (Repeat step 4 until firm.)

5. Indolent. (Pause.) What's a synonym for **indolent?** (Signal.) *Lazy.* And what's a synonym for **lazy?** (Signal.) *Indolent.* (Repeat step 5 until firm.)

6. Listen. I feel lazy after eating a lot. Say that. (Signal.) *I feel lazy after eating a lot.* (Repeat until firm.) Now say that sentence with a synonym for **lazy.** (Pause.) Get ready. (Signal.) *I feel indolent after eating a lot.* (Repeat until firm.) (Repeat step 6 until firm.)

EXERCISE 5
STATEMENT INFERENCE
The next Thinking Operation is **Statement Inference.**
1. Listen. The hawk descended to catch a small amphibian. Say that statement. (Signal.) *The hawk descended to catch a small amphibian.* (Repeat until firm.)

Individual test
Call on individual students to say the statement.
2. Everybody, listen. The hawk descended to catch a small amphibian.
What kind of amphibian did the hawk descend to catch? (Signal.) *Small.*
What descended to catch a small amphibian? (Signal.) *The hawk.*
What did the hawk do to catch the small amphibian? (Signal.) *Descended.*
What did the hawk do? (Signal.) *Descended to catch the small amphibian.*
Why did the hawk descend? (Signal.) *To catch the small amphibian.* (Repeat step 2 until firm.)

Individual test
Call on individual students to answer a question from step 2.

EXERCISE 6
BASIC EVIDENCE: Using Facts
The next Thinking Operation is **Basic Evidence.**
1. You're going to use two facts to explain things that happened. (Hold up one finger.) First fact. Most animals breathe air. Say it. (Signal.) *Most animals breathe air.* (Repeat until firm.)
(Hold up two fingers.) Second fact. Sweets cause cavities. Say it. (Signal.) *Sweets cause cavities.* (Repeat until firm.)
2. Everybody, say those facts again. (Hold up one finger.) First fact. *Most animals breathe air.* (Hold up two fingers.) Second fact. *Sweets cause cavities.* (Repeat until the students say the facts in order.)

Individual test
Call on students to say the facts in order.
3. Here's what happened. The whale swam to the surface of the water. Tell me the fact that explains why that happened. (Pause.) Get ready. (Signal.) *Most animals breathe air.*
4. Listen. First fact. Most animals breathe air. Second fact. Sweets cause cavities.
5. Here's what happened. George would not eat candy. Tell me the fact that explains why that happened. (Pause.) Get ready. (Signal.) *Sweets cause cavities.*
6. Here's what happened. The dentist did not want her patients to chew gum. Tell me the fact that explains why that happened. (Pause.) Get ready. (Signal.) *Sweets cause cavities.*
7. Here's what happened. The fly died in the covered jar. Tell me the fact that explains why that happened. (Pause.) Get ready. (Signal.) *Most animals breathe air.*
8. (Repeat steps 5-7 until firm.)

EXERCISE 6
DESCRIPTION
The next Thinking Operation is **Description.**
1. Listen. See if you can figure out what I'm talking about. It has a handle. Name three tools I could be talking about. (Call on individual students. Accept all reasonable responses; for example, hammer, rake, broom.)
2. It has a handle and it has bristles. Name two tools I could be talking about. (Call on individual students. Accept all reasonable responses; for example, broom, toothbrush.)
3. It has a handle, it has bristles, and you sweep with it. Everybody, name the tool I'm talking about. (Signal.) *A broom.*

EXERCISE 7
DEDUCTIONS: With all and every
The next Thinking Operation is **Deductions.**

1. I'll say rules with **all** or **every.** You say them the other way. What two words are we going to use? (Hold up one finger.) *All.* (Hold up two fingers.) *Every.*
2. Listen. **Every** bird is warm-blooded. Say that. (Signal.) *Every bird is warm-blooded.* Now say it the other way. Get ready. (Signal.) *All birds are warm-blooded.* (Repeat step 2 until firm.)
3. Here's a new rule. All purses are containers. Say that. (Signal.) *All purses are containers.* Now say it the other way. Get ready. *Every purse is a container. (*Repeat step 3 until firm.)
4. Here's a new rule. All canines are dogs. Say that. (Signal.) *All canines are dogs.* Now say it the other way. Get ready. (Signal.) *Every canine is a dog.* (Repeat step 4 until firm.)
5. Here's a new rule. **Every** human being is a mammal, Say that. (Signal.) *Every human being is a mammal.* Now say it the other way. Get ready. (Signal.) *All human beings are mammals.* (Repeat step 5 until firm.)

EXERCISE 9
DEDUCTIONS: With every
1. Listen to this rule. Every bird has bones. Say the rule. (Signal.) *Every bird has bones.*
2. Listen. A Bengal tiger is a **feline.** What does the rule let you know about a Bengal tiger? (Signal.) *Nothing.*
3. Listen. Every bird has bones. A salmon **is a fish.** What does the rule let you know about a salmon? (Signal.) *Nothing.*
4. Listen. Every bird has bones. A rooster is a **bird.** What does the rule let you know about a rooster? (Signal.) *A rooster has bones.* How do you know that a rooster has bones? (Signal.) *Because every bird has bones.*
5. Listen. Every bird has bones. A pheasant is a **bird.** What does the rule let you know about a pheasant? (Signal.) *A pheasant has bones.* How do you know that a pheasant has bones? (Signal.) *Because every bird has bones.*
6. (Repeat steps 2-5 until firm.)

EXERCISE 10
AND/OR
The next Thinking Operation is **And/Or.**
1. Listen. I'm going to touch my ear or touch my eye. What am I going to do? (Signal.) *Touch your ear or touch your eye.* (Repeat until firm.)
2. Am I going to touch my ear? (Signal.) *Maybe.* Am I going to touch my eye? (Signal.) *Maybe.*
3. Here I go. (Touch your ear.) Did I touch my eye? (Signal.) *No.* Did I touch my ear? (Signal.) *Yes.*
4. (Repeat steps 1-3 until firm.)
5. New problem. I'm going to touch my ear and touch my eye. What am I going to do? (Signal.) *Touch your ear and touch your eye.* (Repeat until firm.)
6. Am I going to touch my ear? (Signal.) *Yes.* Am I going to touch my eye? (Signal.) *Yes.*
7. Here I go. (Touch your ear and touch your eye at the same time.) Did I touch my ear? (Signal.) *Yes.* Did I touch my eye? (Signal.) *Yes.*
8. (Repeat steps 5-7 until firm.)

EXERCISE 11
SAME: Review
The next Thinking Operation is **Same.**
1. I'll name some things. When I call on you, name ways that those things are the same.
2. A hairbrush and a broom. (Call on one student.) Name eight ways they are the same. (Praise the student if he or she names eight ways.)
3. A bicycle and a ship. (Call on one student.) Name eight ways they are the same. (Praise the student if he or she names eight ways.)
4. A banana and a lemon. (Call on one student.) Name eight ways they are the same. (Praise the student if he or she names eight ways.)
5. An oak tree and a pig. (Call on one student.) Name eight ways they are the same. (Praise the student if he or she names eight ways.)
Points
(Pass out the Workbooks. Award points for Thinking Operations.)

Workbook Exercises

We're going to do Workbooks now. Remember to follow my instructions carefully.

EXERCISE 12

DESCRIPTION

1. Everybody, touch part A in your Workbook. Figure out which cake I describe.

2. Item 1. This cake is a dark cake that is square. This cake has two layers. Listen again. (Repeat the description.) Write the letter for item 1.

3. Item 2. This cake is a round cake that has three layers. This cake is light. Listen again. (Repeat the description.) Write the letter for item 2.

4. Item 3. This cake is square and dark. This cake has a cherry on top. Listen again. (Repeat the description) Write the letter for item 3.

5. Let's check your answers. Mark any items you missed with an X.

6. Item 1. This cake is a dark cake that is square. This cake has two layers. Everybody, what letter? (Signal.) *B.*

7. (Repeat step 6 for items 2 and 3.)

Answer key   2. D   3. A

EXERCISE 13

ANALOGIES

1. Everybody, touch part B-1 in your Workbook. This analogy shows what appliances clean. What does the analogy show? (Signal.) *What appliances clean.* Look at the pictures and name the appliances that are in the analogy. (Pause.) Get ready. (Signal.) *A vacuum cleaner and a washing machine.*

Remember, the analogy shows what those appliances clean. Circle the picture that completes the analogy. (Wait.) Everybody, touch the right pictures and say the whole analogy. Get ready. (Signal.) *A vacuum cleaner is to a rug as a washing machine is to a shirt.* (Repeat until firm.) If you didn't circle the picture of a shirt, make an X next to the picture you circled.

Everybody, touch part B-2 in your Workbook. This analogy shows what parts objects have. What does the analogy show? (Signal.) *What parts objects have.*

Look at the pictures and name the objects in the analogy. (Pause.) Get ready. (Signal.) *A tree and a car*

Remember, the analogy shows what parts those objects have. Circle the picture that completes the analogy. (Wait.)

Everybody, touch the right pictures and say the whole analogy. Get ready. (Signal.) *A tree is to a leaf as a car is to a tire.* (Repeat until firm.)

If you didn't circle the picture of a tire, make an X next to the picture you circled.

Individual test

(Call on individual students to do one of the following:)

a. Say the analogy shown in part B-1.

b. What does that analogy show about those appliances?

c. Say the analogy shown in part B-2. d. What does that analogy show about those objects?

EXERCISE 14 TRUE-FALSE

1. Everybody, touch part C in your Workbook. I'll say statements about the picture.

2. Get ready to circle **true, false, or maybe.** Item 1. There is a mammal in the picture. Circle the answer. (Wait.)

3. Item 2. The frog will jump on the horse. Circle the answer. (Wait.)

4. Item 3. There are no reptiles in the picture. Circle the answer. (Wait.)

5. Item 4. The mammal was born in water. Circle the answer. (Wait.)

6. Item 5. The frog was born in water. Circle the answer. (Wait.)

7. Item 6. Both of the animals are cold-blooded. Circle the answer. (Wait.)

8. Everybody, let's check your answers. Say **true, false, or maybe.**

9. Item 1. There is a mammal in the picture. (Signal.) *True.*

10. (Repeat step 9 for items 2-6.)

EXERCISE 14 CLASSIFICATION
1. Everybody, touch part D in your Workbook. These boxes show 3 classes. Touch box B. All the things in that box are chairs. Tell me what kind of chairs they are. (Pause 3 seconds.) Get ready. (Signal.) *Rocking chairs.* So, box B shows the class of rocking chairs.
2. Touch box A. Not all the things in that box are rocking chairs. Tell me the class name for the things in box A. (Pause 3 seconds.) Get ready. (Signal.) *Chairs.*
3. Touch box C. Not all the things in that box are chairs or rocking chairs. Tell me the class name for the things in box C. (Pause 3 seconds.) Get ready. (Signal.) *Furniture.*
4. Now let's figure out which of these classes is the biggest. Tell me the rule about the bigger class. (Signal.) *If a class has more kinds of things, it's bigger.* Look at box A, box B, and box C and figure out which box has more kinds of things than the others. (Pause 4 seconds.)
Which box? (Signal.) *Box C.* Tell me the class name for the things in box C. (Pause.) Get ready. (Signal.) *Furniture.*
Points
(Award points for Workbooks.)

Information
We're going to work on Information now.

EXERCISE 16
• CALENDAR: Holidays
1. Here's a fact about another winter holiday. Valentine's Day is always in February. Say that fact. (Signal.) *Valentine's Day is always in February.* (Repeat until firm.)
2. Tell me three holidays that are in winter. (Pause 2 seconds.) Get ready. (Signal.) *Christmas, New Year's Day, and Valentine's Day.*
Tell me the holiday that is in February. (Pause 2 seconds.) Get ready. (Signal.) *Valentine's Day.*
Tell me the holiday that is in December. (Pause 2 seconds.) Get ready. (Signal.) *Christmas.*
Tell me the date of Christmas. (Pause 2 seconds.) Get ready. (Signal.) *December twenty-fifth.* (Repeat step 2 until firm.)
3. Tell me the holiday that is in January. (Pause 2 seconds.) Get ready. (Signal.) *New Year's Day.*
Tell me the date of New Year's Day. (Pause 2 seconds.) Get ready. (Signal.) January first. Tell me the holiday that is in February. (Pause 2 seconds.) Get ready. (Signal.) *Valentine's Day.*
Tell me the season that all those holidays are in. (Pause 2 seconds.) Get ready. (Signal.) *Winter.* (Repeat step 3 until firm.)
4. (Repeat steps 2 and 3 until firm.)

Individual test
(Call on individual students to answer one of the following questions:)
a. What season is Christmas in?
b. What's the date of Christmas?
c. What season is New Year's Day in?
d. What's the date of New Year's Day?
e. What season is Valentine's Day in?
f. What month is Valentine's Day in?

EXERCISE 17
MEMORIZATION: Poem
1. You're learning a poem about American Indians. Let's name those Indians.
2. Creek. Say it. (Signal.) *Creek.* Choctaw. Say it. (Signal.) *Choctaw.* Cherokee. Say it. (Signal.) *Cherokee.* Seminole. Say it. (Signal.) *Seminole.* Chickasaw. Say it. (Signal.) *Chickasaw.* (Repeat step 2 until firm.)
3. I'll say the whole poem about American Indians. American Indians were what they saw. Some were Creek and some Choctaw. American Indians were what they saw. Cherokee, Seminole, and Chickasaw.

4. Say it with me. (Signal. Respond with the students.) American Indians were what they saw. Some were Creek and some Choctaw. American Indians were what they saw. Cherokee, Seminole, and Chickasaw. (Repeat until students are responding with you.)

5. All by yourselves. (Signal.) *American Indians were what they saw. Some were Creek and some Choctaw. American Indians were what they saw. Cherokee, Seminole, and Chickasaw.* (Repeat until firm.)

To correct: a. (Stop the students as soon as you hear a mistake.)
b. (Say the line they missed.)
c. (Have them repeat the line they missed.)
d. (Repeat step 5.)
Individual test
Call on individual students to say the whole poem. Praise students who make no errors.

• EXERCISE 18
CALENDAR: Months, Seasons
1. Everybody, tell me how many months are in a year. (Pause.) Get ready. (Signal.) *Twelve.*
2. Name the months in a year. (Signal.) *January, February, March, April, May, June, July, August, September, October, November, December.*
3. You told me the (pause; signal) *months in a year.*
4. Everybody, tell me how many seasons are in a year. (Pause.) Get ready. (Signal.) *Four.*
5. Name the seasons in a year. (Signal.) *Winter, spring, summer, fall.*
6. You told me the four (pause; signal) *seasons in a year.*

EXERCISE 19
MEMORIZATION: Poem
Say that poem we learned about the mechanic and the astronomer. Get ready. (Signal.) *A mechanic fixes cars, An astronomer looks at stars, A captain has two bars, And a boxer spars and spars.* (Repeat until firm.)
Individual test
Call on individual students to say the whole poem.
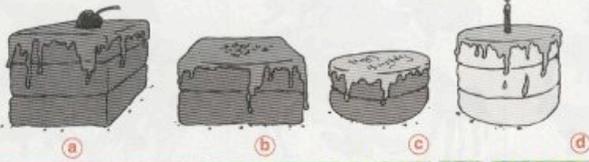**Individual test**
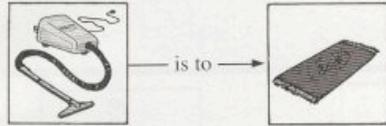Call on individual students to name the months or seasons in a year.
Points
(Award points for Information.
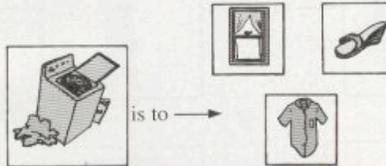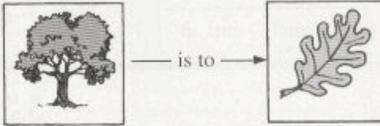Have the students add up their daily total.)
END OF LESSON 29

A

1. _____
2. _____
3. _____

B-1

is to →

AS

is to →

B-2

is to →

AS

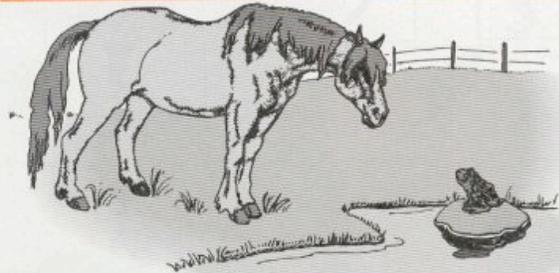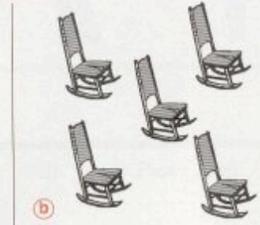is to →
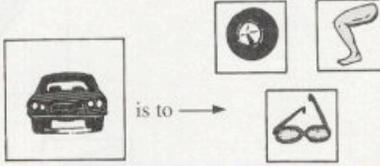
C

1. true   false   maybe
2. true   false   maybe
3. true   false   maybe
4. true   false   maybe
5. true   false   maybe
6. true   false   maybe

D

(a)   (b)   (c)

What about spelling?

Spelling Through Morphographs (Dixon & Engelmann, 2000) McGraw-Hill

A 140 lesson remedial program designed to give older students the tools they need to learn to spell. By teaching a variety of morphographs - prefixes, suffixes and word bases - and a set of rules for combining them, students are able to learn over 500 morphographs giving them the ability to spell over 12,000 words by the end of the program. This highly effective morphographic approach to spelling (20-30 min/day) not only helps students to remember their spelling, but helps them understand the meaning of unfamiliar words.

Placement test at http://www.mcgrawhill.ca/school/schoolGraphics/sra_spellingthroughmorphographs.pdf

Morphographs		
Prefixes	**Bases**	**Suffixes**
re	cover	ed
dis	pute	able

un		

Words formed

recover, recoverable, recovered, unrecoverable,
unrecovered, repute, reputable, reputed,
disreputable, disrepute, covetable, covered,
uncover, uncoverable, uncovered, discover,
discoverable, discovered, undiscoverable,
undiscovered, dispute, disputable, disputed,
undisputable, undisputed, etc.

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Every child a graduate: A framework for an excellent education for all middle and high school students.
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Literacy Education and Reading Programs in the Secondary School: Status, Problems, and Solutions (2002) *Freya M.J., Zippere; M. Thomas Worley; Michelle W. Sisson; Rhonda W. Said NASSP Bulletin, Vol. 86, No 632*

The status of literacy education and the reading program at the secondary school level is examined. Current problems and possible solutions for those problems are discussed. Results of a survey of principals' perceptions of their reading programs in a local school system are analyzed and supported by appropriate literature on the topic. On the Web: http://www.nassp.org/news/bltn_literacyed0902.html

The Keys to Literacy (2002) *Council for Basic Education*

A CBE special report on excellent reading instruction. The second edition includes eight authors, chosen for their national reputation and commitment to a literate society. The articles address reading research, teacher training, student instruction, and reading comprehension. A list of follow-up actions accompanies the articles to assist administrators, teachers, and parents in applying this knowledge to their own instructional activities. On the Web: http://www.c-b-e.org/PDF/KeystoLiteracy2002.pdf

The Urban High School's Challenge: Ensuring Literacy for Every Child (2002) *Carnegie Corporation of New York*

With the goal of elevating the issue to the national agenda, this paper details the importance of adolescent literacy and its essential role in society. It describes various approaches across the nation that address the need for systemic change in the teaching of reading to high school students. On the Web: http://www.carnegie.org/pdf/literacy.pdf

Adolescent Reading: A Synthesis of Research (2002) *Mary E. Curtis, Center for Special Education, Lesley University*

This paper summarizes the major findings of adolescent reading research conducted since 1990 and makes recommendations for areas that have yet to be considered. Completed at the request of NIFL and NICHD, the results were presented at Practice Models for Adolescent Literacy Success: The Second Workshop on Adolescent Literacy in Baltimore, MD in May 2002. On the Web: http://216.26.160.105/conf/nichd/synthesis.asp

Strategic Instruction Model: The Strategic Instruction Model Approach to Improving Adolescent Literacy (2002) *B. Keith Lenz, The University of Kansas, Center for Research on Learning*

The Center for Research Learning's model to address many of the needs of diverse learners, Strategic Instruction Model (SIM), promotes effective teaching and learning of critical literacy skills and strategies to students. This series of papers discuss the model, evaluations of the model, the instructional components, the use of the model in secondary schools, and its effects on high school students. On the Web: http://www.ku-crl.org

Reading for Understanding: Toward an R&D Program in Reading Comprehension (2002) *RAND Reading Study Group*

RAND convened 14 experts in the field of reading to propose strategic guidelines for long-term research and development. Originally intended to inform the U.S. Department of Education's Office of Educational Research and Improvement (OERI) about ways to improve the quality and relevance of education research and development, this report is the product of those efforts. On the Web: http://www.rand.org/cgi-bin/Abstracts/ordi/getabbydoc.pl?doc=MR-1465

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Success of a Direct Instruction Model at a secondary level school with high-risk students (2002) *Bonnie Grossen, University of Oregon*
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This 480-page comprehensive report explains the methodology and scientific research used by the National Reading Panel in its effort to assess the best ways to teach children to read. The report is divided into five topics: Alphabetics, Fluency, Comprehension, Teacher Education and Reading Instruction, and Computer Technology and Reading Instruction. On the Web: http://www.nationalreadingpanel.org/Publications/subgroups.htm

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This 35-page summary report explains the origin of the Panel and its congressional charge, and succinctly describes the research methodology used and the findings of each of the Panel subgroups: Alphabetics, Fluency, Comprehension, Teacher Education and Reading Instruction, and Computer Technology and Reading Instruction. On the Web: http://www.nationalreadingpanel.org/Publications/summary.htm

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A comprehensive overview of issues in the field of reading research, this volume is divided into the following topics: literacy research around the world, methods of literacy research, literacy processes, literacy practices and literacy policies.

Adolescent Literacy: A Position Statement for the Commission on Adolescent Literacy of the International Reading Association (1999) *David W. Moore, Thomas W. Bean, Deanna Birdyshaw, James A. Rycik*
IRA recommends a wide variety of motivating reading material; instruction that encompasses reading comprehension, critical reading, and study strategies across the curriculum; qualified teachers who can respond to each learner's uniqueness; and reading specialists to assist individual students. On the Web: http://www.reading.org/pdf/1036.pdf

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This guide to improving reading in middle and high school classrooms describes a successful approach to helping student improve their literacy. The program, Adolescent Literacy, increased the average reading scores by more than two years after only seven months of instruction for the entire freshman class at a San Francisco high school. The report discusses the strategies, like reading apprenticeships, and support systems needed to implement and evaluate such programs throughout a school. On the Web: http://www.josseybass.com/cda/product/0,,0787950459||2978,00.html

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