# Literacy Quotes

As I read articles, I'm always alert to findings in the research that may have implications for questions with which I'm currently struggling. As you see there have been a lot of questions over the last ten years or so!

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"Victoria's outcomes have not improved in the past decade, despite increased expenditure in the same period. International assessment programs consistently show that the gap between Victoria and the best performing jurisdictions internationally has grown, with implications for our global competitiveness and future economic growth. International benchmarking from 2011 shows that Australian and Victorian performance has remained largely static and our overall ranking has dropped, while other nations have moved ahead. In the Progress in International Reading Literacy Study, 20 per cent of Victorian students (and 25 per cent of Australian students) did not meet the literacy proficiency standard, while overall Australia ranked 22nd out of 45 countries.1 In the Trends in International Mathematics and Science Study over a third of Victoria's Year 8 students did not meet the proficiency standard in maths. Overall Australia's Year 4 students were ranked equal 18th in maths and 19th in science out of over 40 countries" (p.6).

Department of Education and Early Childhood Development. (2013). From New Directions to Action: World class teaching and school leadership. Retrieved from http://www.education.vic.gov.au/Documents/about/department/teachingprofession.pdf

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But even in low-income families, parents who speak to their children more frequently can enhance vocabulary. In separate research, Ms. Fernald, working with Adriana Weisleder, a graduate student in psychology, recorded all the words that 29 children from low-income households heard over a day.

The researchers differentiated between words overheard from television and adult conversations and those directed at the children. They found that some of the children, who were 19 months at the time, heard as few as 670 "child-directed" words in one day, compared with others in the group who heard as many as 12,000.

Those who had heard more words were able to understand words more quickly and had larger vocabularies by age 2.

Weisleder, A. & Fernald, A. (2013). Talking to children matters: Early language experience strengthens processing and builds vocabulary. *Psychological Science,*

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At 18 months children from wealthier homes could identify pictures of simple words they knew — "dog" or "ball" — much faster than children from low-income families. By age 2, the study found, affluent children had learned 30 percent more words in the intervening months than the children from low-income homes.

Fernald, A., Marchman, V.A., & Weisleder, A. (2013). SES differences in language processing skill and vocabulary are evident at 18 months. *Psychological Science,* 16(2), 234-238.

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To further explore contextual reading rate, an important aspect of reading fluency, we examined the relationship between word reading efficiency (WRE) and contextual oral reading rate (ORR), the degree to which they overlap across different comprehension measures, whether oral language (semantics and syntax) predicts ORR beyond contributions of word-level skills, and whether the WRE–ORR relationship varies based on different reader profiles. Assessing reading and language of average readers, poor decoders, and poor comprehenders, ages 10 to 14, ORR was the strongest predictor of comprehension across various formats; WRE contributed no unique variance after taking ORR into account. Findings indicated that semantics, not syntax, contributed to ORR. Poor comprehenders performed below average on measures of ORR, despite average WRE, expanding previous findings suggesting specific weaknesses

in ORR for this group. Together, findings suggest that ORR draws upon skills beyond those captured by WRE and suggests a role for oral language (semantics) in ORR (p.

Eason, S,H., Sabatini, J., Goldberg, L., Bruce, K., & Cutting, L.E. (2013). Examining the relationship between word reading efficiency and oral reading rate in predicting comprehension among different types of readers. *Scientific Studies of Reading, 17*(3), 199-223.

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The present study investigated the relationships between lexical access, reading fluency, and comprehension. Two components of speed of lexical access were studied: phonological and semantic. Previous studies have mainly investigated these components of lexical access separately. The present study examined both components in naming tasks—with isolated letters (phonological) and pictures (semantic). Seventy-five Grade 5 students were administered measures of letter and picture naming speed, word and nonword reading fluency, and reading comprehension, together with control measures of vocabulary. The results showed that letter naming was a unique predictor of word reading fluency, whereas picture naming was not. Conversely, picture naming speed contributed unique variance to reading comprehension, whereas letter naming did not. The results indicate that phonological and semantic lexical access speed are separable components that are important for different reading subskills (p. 303).

Poulsen, M., & Elbro, C. (2013). What's in a name depends on the type of name: The relationships between semantic and phonological access, reading fluency, and reading comprehension. *Scientific Studies of Reading, 17(*4), 303-314.

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"Effect sizes decrease by school level (e.g., greater for younger students than middle school and upper elementary students). Also, there were larger effects for quasi-experimental than experimental studies and for researcher-designed measures than for standardized measures. Implications for educational settings and research agendas are discussed" (p.257).

Goodwin, A.P., & Ahn, S. (2013). A meta-analysis of morphological interventions in English: Effects on literacy outcomes for school-age children. *Scientific Studies of Reading, 179*(4), 257-285.

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"Conclusion Although we recognize that extreme environmental variation in early reading development may have large effects on individual and group differences, the small shared family and school environment influences on variation in our twins' early reading and spelling development seem inconsistent with current popular and political views in the United States, as illustrated by the No Child Left Behind Act (2008), that individual differences in children's early reading skills are primarily due to environmental differences related to family environment and/or teacher and school quality. Although there is considerable evidence that intensive intervention can significantly ameliorate reading difficulties in some children, other children may still fall short of grade level due to their slower genetically influenced learning rates in reading and related skills (Byrne et al., 2008; Byrne et al., in press). Therefore, greater attention to the importance of genetic influences could lead to a more nuanced and realistic understanding of individual differences in children's early reading development" (p.366).

Christopher, M.E., Hulslander, J., Byrne, B., Samuelsson, S., Keenan, J.M., Bruce Pennington, B., DeFries, J.C., Wadsworth, S.J., Willcutt, E.G., & Olson, R.K. (2013). Modeling the etiology of individual differences in early reading development: Evidence for strong genetic influences, *Scientific Studies of Reading, 17*(5), 350-368.

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"Based on detailed information for a set of nationally normed achievement tests, the academic developmental trajectory for average students in the United States appears to be one of rapid growth in the first several grades of elementary school, followed by gradually declining gains in later grades. Expressed as effect sizes, the annual gains in the early years are around 1.00, while those in the final grades of high school are 0.20 or less. … an intervention effect of a given magnitude represents a much larger proportion of normal annual growth for students in higher grades than it does for students in lower grades. … With respect to student subgroups, it was demonstrated that the gaps on standardized achievement tests range from less than 0.10 standard deviation for gender differences in math performance to almost a full standard deviation for race/ethnicity differences in math and reading. Any given intervention effect size will therefore "look" very different, depending on the gap (or gaps) with which it is compared". (p.29).

Bloom, H.S., Hill, C.J., Black, A.R., & Lipsey, M.W. (2008). *Performance trajectories and performance gaps as achievement effect-size benchmarks for educational interventions*. MDRC Working Papers on Research Methodology. Retrieved from http://mdrc.org/sites/default/files/full_473.pdf

As Dr. Samuel Blumenfeld has mordantly noted in The Victims of Dick and Jane, "The International Reading Association...is perhaps the only organization of such size in which a form of educational malpractice has been enshrined as the highest pedagogical good and its practitioners awarded prizes for their achievements....The vast majority of American children are trapped within a system that is turning their brains into macaroni."
Blumenfeld, S.L. (2003). *The victims of Dick and Jane.* Chalcedon

Palmaffy (1997) suggested that approximately 50% of children easily learn to read, 25% experience some degree of difficulty, and 25% experience serious difficulty learning to read.
Palmaffy, T. (1997, November - December). See Dick Flunk. *Policy Review, 86*, 32-40.

" … individual differences in response to early literacy instruction are increasingly accounted for by genetic factors as the intensity and consistency of instruction increases. In general, our results support the basic RTI approach that recognizes the need for more intense instruction for poor readers that are not otherwise instructional failures, which our results say are most poor readers at the end of first grade for the samples in our three countries" (p.295).
Samuelsson, S., Byrne, B., Olson, R.K., Hulslander, J., Wadsworth, S., et al. (2008). Response to early literacy instruction in the United States, Australia, and Scandinavia: A behavioral-genetic analysis. *Learning & Individual Differences, 18*(3), 289-295.

"Here I want to briefly examine some basic considerations, from the perspective of a scientist who studies how reading works, which suggest that how reading is taught is indeed a significant part of the literacy problem in the United States and other countries. There are three main points: (a) Contemporary reading science has had little impact on educational practice mainly because of a two-culture problem separating science and education; (b) This disconnection has been harmful. Current practices rest on outdated assumptions about reading and development that make learning to read harder than it needs to be, a sure way to leave many children behind; (c) Connecting the science to educational practice would be beneficial but is extremely difficult to achieve. The current environment limits the amount of collaborative work at the all-important translational interface. In the United States, the conflicting and often strongly entrenched interests of various stakeholders—educators, politicians, scientists, taxpayers, labor organizations, parent groups—make it hard to achieve meaningful change within the existing institutional structure of public education" (p.340-1).
Seidenberg, M.S. (2013). The science of reading and its educational implications. *Language Learning and Development, 9*(4), 331-360.

As Hanley et al. (2004) noted, "this result suggests that a transparent orthography does not confer any advantages as far as reading comprehension is concerned. As comprehension is clearly the goal of reading, this finding is potentially reassuring for teachers of English" (p. 1408).
Hanley, J. R., Masterson, J., Spencer, L., & Evans, D. (2004). How long do the advantages of learning to read a transparent orthography last? An investigation of the reading skills and reading impairment of Welsh children at 10 years of age. *Quarterly Journal of Experimental Psychology, 57*, 1393–1410.

Italian, German, Russian, Finnish, Korean, Serbo-Croatian, and many other alphabets are "shallow" (Katz & Frost, 1992).
Katz, L., & Frost, R. (1992). The reading process is different for different orthographies: The orthographic depth hypothesis. In R. Frost & L. Katz (Eds.), *Orthography, phonology, morphology, and meaning* (pp. 67–84). Amsterdam, the Netherlands: Elsevier North Holland Press.

"Gersten et al. (1986) evaluated perceptions of teachers and paraprofessionals with regard to a Direct Instruction program. Teachers were interviewed toward the end of the first and second year of implementation. Initially, teachers were concerned with the high degree of structure leaving little room for

fun activities and felt that scripted lessons were overly mechanical. At least half of the teachers believed that their teaching philosophy conflicted with that of Direct Instruction. By mid year, Gersten et al. found that teachers and paraprofessionals generally came to accept the program. By the end of the first year, attitudes had improved along with student achievement. Gersten et al. found that by the end of the second year of implementation, all but one teacher agreed with the main objectives of Direct Instruction as a program for educationally disadvantaged students (p.26-27).

In the final discussion, Proctor concludes that 89% of all subjects agreed that regular use of Direct Instruction had increased their appreciation of the method. Also, the results show evidence supporting the relationship between the amount of supervised experience and positive attitudes towards Direct Instruction (p.28).

Results from the pre and post internship evaluation show that responses in favor of Direct Instruction increased. Differences in responses regarding attention signals, response signals, and feedback were statistically significant. Cossairt et al. conclude, "After completion of an internship where they work directly with educationally handicapped students, students felt even more strongly about the usefulness and values of these techniques" (p. 170)" (p.28-9)

"It is evident that the majority of the responses favored Reading Mastery. Overall, the teachers surveyed seemed to have mostly positive attitudes and perceptions towards the program. In general, it appears that the majority of participants believe that Reading Mastery aids learning and that they have seen positive results with the program" (p.58).

Cossairt, A., Jacobs, J., & Shade, R. (1990). Incorporating direct instruction skills throughout the undergraduate teacher training process: A training and research direction for the future. *Teacher Education and Special Education, 13*, 167-171.
Gersten, R., Carnine, D., & Cronin D. (1986). A multifaceted study of change in seven inner-city schools. *Elementary School Journal*, *86*, 257-276.
Proctor, T. J. (1989). Attitudes toward direct instruction. *Teacher Education and Special Education*, *12*, 40-45.
Gervase, S. (2005). *Reading Mastery: A descriptive study of teachers attitudes and perceptions towards Direct Instruction.* (Electronic Thesis or Dissertation). Retrieved from
http://rave.ohiolink.edu/etdc/view?acc_num=bgsu1120001760

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"The results show that teachers often prefer direct instruction, and seldom promote discovery learning. While teachers sometimes realize authentic pedagogy, constructive learning tasks are seldom used. Teachers' reported practice and parents' preferences for their children appear to correspond reasonably" (Abstract). ... "However, the infrequent use of discovery learning environments, compared with direct instruction, is mirrored by parents preferences" (p.17).

Roelofs, E., Visser, V., & Terwel, J. (2003). Preferences for various learning environments: Teachers' and parents' perceptions. *Learning Environments Research, 6*(1), 77-110.

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"Snow and Moje (2010) described the widespread and misguided assumption that we should finish reading instruction by the end of third grade. They used the term "inoculation fallacy" to illustrate the notion that an early vaccination of reading instruction, especially in grades K–3, does not protect permanently against reading failure. Educators must continue to provide reading instruction beyond third grade. In sum, academic literacy goes beyond being able to read—a successful reader should be able to navigate advanced narrative and content-area text with ease and understanding" (p.162).

Marchand-Martella, N.E., Martella, R.C., Modderman, S.L., Petersen, H.M., & Pan, S. (2013). Key areas of effective adolescent literacy programs. *Education and Treatment of Children, 36*(1), 161-184.

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"Research almost universally supports explicit instructional practices (Archer & Hughes, 2011; Kirschner, Sweller, & Clark, 2006; Klahr & Nigam, 2004; Marchand-Martella, Slocum, & Martella, 2004). Explicit

instructional approaches are considered more effective and efficient as compared to discovery-based approaches (Alfieri, Brooks, Aldrich, & Tenenbaum, 2010; Ryder, Tunmer, & Greaney, 2008), particularly when students are naïve or struggling learners" (p.166).

Marchand-Martella, N.E., Martella, R.C., Modderman, S.L., Petersen, H.M., & Pan, S. (2013). Key areas of effective adolescent literacy programs. *Education and Treatment of Children, 36*(1), 161-184.

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"Based on the research reviews and meta-analyses on adolescent literacy instruction, recommendations can be organized into five general areas: word study, fluency, vocabulary, comprehension, and motivation (Boardman et al., 2008; Kamil et al., 2008; Roberts et al., 2008; Scammacca et al., 2007; Torgesen et al., 2007)" (p.167).

Marchand-Martella, N.E., Martella, R.C., Modderman, S.L., Petersen, H.M., & Pan, S. (2013). Key areas of effective adolescent literacy programs. *Education and Treatment of Children, 36*(1), 161-184.

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Questions have sometimes been raised about the extent to which reading skills of struggling adolescents can be remediated and whether the money spent on such interventions is justified in light of the degree of benefit attained (Vaughn et al., 2010, 2011, 2012). Adolescents who have already gone through years of reading instruction and still lag behind their same age peers are a very heterogeneous group in their reading abilities. Through the use of both group and individual differences analysis we were able to gain a more complete and finely-tuned picture of how these struggling readers respond to treatment. The struggling readers in this study were multiple grade levels (3–7 years) behind their typically developing peers in reading ability. Results of both group and individual analyses indicate these older struggling readers can be remediated **and for some, gains of two, three, four, or more years can be accomplished with only 1 year of instruction.** While two to three years of gain for students who are four to six years behind by no means closes the achievement gap, these findings are encouraging in providing information on which modality of instruction closes the achievement gap best

"Most compelling from the current analyses are results directly investigating the differences between three modalities (Alternating, Integrated, Additive) of instruction. Outcomes showed clearly that modality of instruction can matter considerably for these older struggling readers. The differences in gains clearly demonstrate that the Additive modality, with its sequential addition of each component (isolated phonological decoding instruction, followed by addition of spelling instruction, followed by addition of fluency instruction, and finally the addition of comprehension instruction [see Table 1]) is potentially the best modality for remediating reading skills (decoding, spelling, fluency, comprehension) in older struggling readers, of the three approaches that were compared in this research. These students show that they are highly sensitivity to the scheduling of the components and the amounts of instructional time per component; this is an important finding for the development and refinement of reading programs for struggling adolescent readers. While more research still needs to be conducted in this area, this study lends credence to the different requirements this unique population of students may need in order to close the achievement gap in acquiring adequate reading skills" (p.588-9).

Calhoon, M. B., & Prescher, Y. (2013). Individual and group sensitivity to remedial reading program design: Examining reading gains across three middle school reading projects. *Reading and Writing: An Interdisciplinary Journal, 26,* 565-592.

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"Impressive and unexpected were the large gains made in comprehension by students in the Additive modality, insofar as they receive relatively few hours of explicit comprehension instruction (12–13 h.) in comparison to the other modalities (24–39 h). The theoretical underpinnings of the Additive modality are that reading is hierarchical and that automaticity of lower level skills (decoding, spelling) allows cognitive efforts to then be allocated to attaining higher level skills (fluency, comprehension; LaBerge & Samuels, 1974; Reynolds, 2000, Samuels & Kamil, 1984). Clearly, the changes brought about by other aspects of instruction (front loading of phonics instruction, followed by the addition of spelling instruction, followed by the addition of fluency instruction) laid the groundwork for comprehension gains, without having to supply a great deal of explicit comprehension instruction. These older struggling readers were able to master decoding, spelling, and fluency, before comprehension was even introduced into instruction, enabling them to more fully understand strategy instruction and achieve comprehension gains with very

little explicit comprehension strategy instruction. These results strongly suggest that it may not be how many hours of instruction for each component that is important, but instead when those hours are incorporated into organization of instruction, that matters most" (p.587).

Calhoon, M. B., & Prescher, Y. (2013). Individual and group sensitivity to remedial reading program design: Examining reading gains across three middle school reading projects. *Reading and Writing: An Interdisciplinary Journal, 26,* 565-592.

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"With regard to skill improvement, outcomes in three of the studies were associated with differences in the initial reading skill level of older learners (Calhoon and Petscher, 2013; Greenberg et al., 2012; Scarborough et al., 2012)" (p.492). That is the higher were the pretest scores the higher were the gains.

Calhoon, M.B., Scarborough, H.S., & Miller, B. (2013). Interventions for struggling adolescent and adult readers: instructional, learner, and situational differences. *Reading and Writing, 26,* 489–494.

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"Calhoon and Petscher found compelling indications that the level of improvement by their adolescent sample and the percentages of students classified as gainers, were influenced by the way that elements of how a common curriculum were organized and sequenced during instruction" (p.492).

Calhoon, M.B., Scarborough, H.S., & Miller, B. (2013). Interventions for struggling adolescent and adult readers: instructional, learner, and situational differences. *Reading and Writing, 26,* 489–494.

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"Older struggling readers fall into a wide range of developmental levels, presenting a unique set of circumstances not found in younger more homogeneous beginning readers (Biancarosa & Snow, 2004). These struggling adolescents readers generally belong to one of two categories, those provided with little or poor early reading instruction or those possibly provided with good early reading instruction, yet for unknown reasons were unable to acquire reading skills (Roberts, Torgesen, Boardman, & Sammacca, 2008). Additionally within these two categories, older struggling readers are extremely heterogeneous and complex in their remediation needs (Nation, Snowling, & Clarke, 2007; Torgesen et al., 2007)" (p.566).

Calhoon, M. B., & Prescher, Y. (2013). Individual and group sensitivity to remedial reading program design: Examining reading gains across three middle school reading projects. *Reading and Writing: An Interdisciplinary Journal, 26,* 565-592.

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"A recent meta-analysis of 85 studies with struggling readers in preschool through 7th grades suggests that the optimal type or modality of reading intervention may vary with grade level (Suggate, 2010). Phonics interventions produced greater effect sizes for kindergarten and 1st grade students, while mixed (phonics with comprehension) interventions and pure comprehension interventions yielded larger effects for older students. However, given the wide range of results from adolescent intervention studies (Fuchs, Fuchs, & Kazdan, 1999; Hasselbring & Goin, 2004; Lovett, Borden, DeLuca, Lacerenza, Benson, & Brackstone, 1994; Lovett, Lacerenza, Borden, Frijters, Steinbach, & De Palma, 2000; Lovett & Steinbach, 1997; Lovett, Steinbach, & Frijters, 2000; Mastropieri et al. 2001; Vaughn et al., 2010, 2011,2012), additional research on this issue is needed to provide a more complete picture that can inform the design and delivery of instruction for older struggling readers (Suggate, 2010)" (p.566).

Calhoon, M. B., & Prescher, Y. (2013). Individual and group sensitivity to remedial reading program design: Examining reading gains across three middle school reading projects. *Reading and Writing: An Interdisciplinary Journal, 26,* 565-592.

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"Unfortunately, quality training in research-based principles, tactics, and components is not commonplace. For instance, in a survey conducted by the National Council on Teacher Quality of 72 teacher education programs (Walsh, Glaser, & Wilcox, 2006), only 15% of them taught all five components of successful reading instruction (National Reading Panel [NRP], 2000) and almost half of the programs taught none of them. Similar results were found for preparation programs in special education (Reschly, Holdheide, Smartt, & Oliver, 2007)" (p.174).

Slocum, T. A., Spencer, T. D., & Detrich, R. (2012). Best available evidence: Three complementary approaches. *Education and Treatment of Children, 35*(2), 153 – 181.

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"Baker, Gersten, Dimino, and Griffiths (2004) found that knowledge of a practice's underlying principles distinguished between teachers who were high sustainers and teachers characterized as moderate

sustainers. The results of these studies suggest that when teachers lack an understanding of research-based principles that allow effective adaptation, interventions may be prematurely discarded and practitioners may conclude that research has little relevance to their practice (Gersten, Vaughn, Deshler, & Schiller, 1997)" (p.172).

Slocum, T. A., Spencer, T. D., & Detrich, R. (2012). Best available evidence: Three complementary approaches. *Education and Treatment of Children, 35*(2)*,* 153 – 181.

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Bear in mind that whilst the budgets for the provision of health and education services are roughly similar, the funding for health research is about 16 times that for education.

Australian Bureau of Statistics. (2010). *ABS Research and Experimental Development, All Sector Summary, Australia, 2008-09*. Retrieved from http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/8112.02008-09?OpenDocument

The US D.O.E. spends about $80 million annually in educational research; whereas, the Department of Health and Human Services provides about $33 billion for health research.

The Haan Foundation. (2012). The federal education research project. Retrieved from http://www.haan4kids.org/fed_proj/

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"Research evidence indicates strongest gains in PA skills are observed when no more than one to two PA skills are taught at any one time (Ehri, Nunes, Willows et al., 2001), emphasising phoneme segmenting and blending sounds in spoken words as key foundation literacy skills. Furthermore, PA training is most effective in facilitating early PA skill and accelerating early word reading, when combined with letter knowledge training (Byrne & Fielding-Barnsley, 1991; Ehri, Nunes, Stahl et al., 2001; Ehri, Nunes, Willows et al. 2001; Hatcher et al., 1994, 2006), and when instruction includes exercises to teach the application of PA in reading (words and connected text) and writing tasks (Cunningham, 1990; Hatcher et al., 1994, 2006)" (p.99).

Griffiths, Y., & Stuart, M. (2013). Reviewing evidence-based practice for pupils with dyslexia and literacy difficulties. *Journal of Research in Reading, 36*(1), 96-116.

"The rates of responsiveness are less positive than those following early intervention, ranging from 15% to 60% of pupils in any sample of dyslexics (depending on reading outcome measures) unable to make significant, longlasting gains, when assessed up to 2 years following the end of the intervention (Torgesen, 2000, 2005). The gains in word reading fluency from phonologically based interventions are typically weaker for older pupils than for younger pupils receiving early intervention" (p.100).

Griffiths, Y., & Stuart, M. (2013). Reviewing evidence-based practice for pupils with dyslexia and literacy difficulties. *Journal of Research in Reading, 36*(1), 96-116.

"Roberts et al. (2008) suggest the five areas recognised by the NRP as key ingredients for early reading intervention should be adapted for older readers to include: (i) word study, (ii) fluency, (iii) vocabulary, (iv) comprehension and (v) motivation. Low levels of motivation are a common barrier to learning (Guthrie & Davis, 2003) and a predictor of response to intervention (RTI: Duff, 2008), particularly in older pupils. Reduced reading experience following a long-lasting reading difficulty may also impact on a pupil's spoken and written vocabulary, reading fluency and effective comprehension strategies. Hence, careful assessment and diagnosis of older pupils is essential to ensure the appropriate programme of intervention is provided." (p.100).

Griffiths, Y., & Stuart, M. (2013). Reviewing evidence-based practice for pupils with dyslexia and literacy difficulties. *Journal of Research in Reading, 36*(1), 96-116.

Group size. Evidence from reviews of the literature has shown small group delivery (typically three to four pupils per adult) can be as effective as individual tutoring (1:1) when effect sizes are compared across studies employing one of these two methods of delivery (Elbaum, Vaughn, Hughes & Moody, 2000; Vaughn, Linan-Thompson, Kouzekanani et al., 2003; see also Hatcher et al., 2006). To our knowledge, only one study has manipulated group size using the same intervention programme (Helf, Cooke & Flowers, 2009), reporting equivalent levels of programme efficacy for small group instruction (1:3) relative to individual tutoring (1:1). Even with older pupils with severe and persisting dyslexic reading

difficulties, there is evidence from well-controlled studies that small group intervention, when intensive (e.g. 100 hours), can be as effective as individually delivered intervention, bringing below average pre-intervention reading levels into the average range (Lovett et al., 2000; Rashotte et al., 2001; Torgesen, Rashotte, Alexander, Alexander & MacPhee, 2003). Such findings have clear implications for costs, when making decisions about effective Wave 2 reading intervention programmes" (p.101-102).

Griffiths, Y., & Stuart, M. (2013). Reviewing evidence-based practice for pupils with dyslexia and literacy difficulties. *Journal of Research in Reading, 36*(1), 96-116.

"Characteristics of pupils who fail to respond to Wave 2 intervention Recent research has begun to investigate the characteristics of these 'nonresponders' to otherwise effective early reading intervention (at Wave 2), with a small number of longitudinal studies evaluating progress of pupils from Wave 1 through Wave 3 within the RTI framework. A number of the large-scale intervention studies reviewed in previous sections concur that predictors of poor response rates in their studies include weak pre-intervention levels of phonological/reading skills, problem levels of teacherrated behaviour and inattention and low SES (Hatcher et al., 2006; Torgesen et al., 1999; for reviews, see Al Otaiba & Fuchs, 2002, 2006; Duff, 2008; Nelson, Benner & Gonzalez, 2003). A small number of studies have identified co-occurring weak oral language skills as an additional predictor of response to phonological-based interventions (e.g. Vadasy, Sanders & Abbott, 2008; Whiteley et al., 2007; but see Hatcher & Hulme, 1999; Vellutino et al., 1996). A recent meta-review of five intervention studies reported in the United States identified seven cognitive‑linguistic variables related to variation in RTI, listed from strongest to weakest predictor (see Duff, 2008 for further details): slow rapid naming (RAN), problem behaviour, poor PA, limited understanding of the alphabetic principle, weak verbal memory, IQ and demographics. Environmental factors influencing RTI potentially include quality of Wave 1 teaching, point of intervention (early or late, where 'late' is defined as after KS 1 in England or G2 in the United States) and programme fidelity. The careful training, implementation, supervision and monitoring which characterises research studies may not always be observed in other circumstances with detrimental effects on the outcome of the intervention (Byrne & Fielding-Barnsley, 1995; Byrne et al., 2010; see Carter & Wheldall, 2008 for further discussion of this issue). Programme content may also influence outcome when the evidence base for inclusion of that content is weak or the content and/or implementation is inappropriate for the individual's profile of needs, due to insufficient assessment and monitoring" (p.105).

Griffiths, Y., & Stuart, M. (2013). Reviewing evidence-based practice for pupils with dyslexia and literacy difficulties. *Journal of Research in Reading, 36*(1), 96-116.

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"The evidence base reviewed above, of the characteristics of effective Wave 2 intervention programmes for early and more persisting word reading difficulties, suggests more research is needed to better understand the role of: (a) instructional intensity (length of intervention, hours of instruction, optimal ratios of teachers to students, reading time, etc.); (b) programme integrity/fidelity; (c) teacher ability/experience; (d) programme focus/explicitness/multidimensionality; and (e) individual student prior instructional experiences/exposure and reading abilities. The ways in which these factors, individually and together, affect treatment outcomes are just beginning to be addressed, particularly for treatment resisters (Shaywitz et al., 2008)" (p.106).

Griffiths, Y., & Stuart, M. (2013). Reviewing evidence-based practice for pupils with dyslexia and literacy difficulties. *Journal of Research in Reading, 36*(1), 96-116.

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"More research is also needed to explore the impact of other co-occurring difficulties, such as inattention, on responsiveness. Empirical investigation of ways to increase the motivation of older struggling readers could also impact on the effectiveness of teaching these hard-to-teach pupils" (p.112).

Griffiths, Y., & Stuart, M. (2013). Reviewing evidence-based practice for pupils with dyslexia and literacy difficulties. *Journal of Research in Reading, 36*(1), 96-116.

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"In conclusion, then, our contention is as follows: while it is possible to design and carry out a study which could provide unequivocal evidence that there is a causal link from competence in phonological awareness to success in reading and spelling acquisition, we do not think that such a study exists in the literature. We hope that this review will provide the stimulus for just such a study" (p.105).

Castles, A., & Coltheart, M. (2004). Is there a causal link from phonological awareness to success in learning to read? *Cognition, 91*(1), 77-111.

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"Overall, the data suggest that there is little value in training pre-schoolers in either letter forms or sounds in isolation in advance of providing instruction on the links between the two" (p. 68).

Castles, A., Coltheart, M., Wilson, K., Valpied, J., & Wedgwood, J. (2009). The genesis of reading ability: what helps children learn letter-sound correspondences? *Journal of Experimental Child Psychology, 104*(1), 68-88.

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"In conclusion we did not find any evidence for the claim that phonological awareness deficits cause reading deficits. Instead, we found that problems in learning letter–speech sound associations and integration characterize children at familial risk for dyslexia" (p.314).

Blomert, L., & Willems, G. (2010). Is there a causal link from a phonological awareness deficit to reading failure in children at familial risk for dyslexia? *Dyslexia 16*, 300–317.

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"Phonological memory refers to the ability to maintain phonological information in working memory (Wagner & Torgesen, 1987). It consists of the phonological loop, a two-part storage system of auditory information (Baddeley, 1992). These two parts of the phonological loop work together, with the first part "recording" the last two seconds of phonological information and the second part providing articulatory input and refreshing the information in phonological storage to permit longer retention (Wagner et al., 1999b; see Baddeley, 2007 for a discussion of the phonological loop). An efficient phonological memory system facilitates reading by allowing the allocation of cognitive resources to blending the sounds together to make words rather than needing to employ a strategy to remember the sounds (Baddeley, 1982). Rapid automatized naming refers to the ability to retrieve phonological information from long-term memory (Wagner et al., 1987). When readers decode words, they unconsciously engage in a variety of cognitive processes that are influenced by rapid automatized naming. They must quickly retrieve the phonological codes for the letters from long-term memory, blend the codes together, and search their long-term memory's internal dictionary in order to make meaning of the combined codes (Wagner et al., 1987)" (p.180).

Nelson, J.M., Lindstrom, J.H., Lindstrom, W., & Denis, D. (2012): The structure of phonological processing and its relationship to basic reading. *Exceptionality: A Special Education Journal, 20*(3), 179-196.

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"In the absence of empirical research, proponents rely heavily on testimonials, anecdotal evidence and in-house unpublished research studies (see for example, DDAT, n.d.; Irlen Institute, n.d.). The presentation of anecdote and professional experience in the absence of scientific evidence (e.g., Evans et al., 1999; Irlen, 1991; Kimball, 1988; Pheloung, 1997) is undoubtedly a factor in the persistence of these approaches. Reliance on anecdotes and testimonies is recognized as one of the signs of pseudoscience (Park, 2003) and as a characteristic of controversial or fad treatments in special education (McWilliam, 1999). A clear belief that personal perceptions are inherently reliable, even when they are in conflict with objective evidence, is a key feature of pseudoscientific thinking (Sagan, 1997; Shermer, 1997). The power of testimonials as persuaders is recognized by the advertising industry (Cialdini, 2001). Newman (2003) provided some compelling accounts of the power of personal stories over hard scientific data in the field of medicine and concluded that a conscious effort is required to make decisions based on scientific evidence" (p.331).

Hyatt, K.J., Stephenson, J., & Carter, M. (2009). A review of three controversial educational practices: Perceptual motor programs, sensory integration, and tinted lenses. *Education and Treatment of Children, 32*(2), 313-342.

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"Among these struggling readers, most (85 %) also had weaknesses on nationally standardized measures, particularly in comprehension; however, most of these also had difficulties in decoding or fluency".

Cirino, P.C., Romain, M., Barth, A.E., Tolar, T., Fletcher, J.M., & Vaughn, S. (2013). Reading skill components and impairments in middle school struggling readers. *Reading and Writing, 26*(1), 1059–1086.

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"The practice of referring to letters by their sounds was motivated by the idea that letter sounds are more useful than letter names in learning to read and spell (e.g., Feitelson, 1988). However, letter names may be worth learning because most of them, in English as in other languages, contain a phoneme that the letter symbolizes (Treiman & Kessler, 2003). Children who are familiar with the names of letters take advantage of this fact (Ellefson et al., 2009; McBride-Chang, 1999; Treiman et al., 1998). A further benefit of conventional letter names is that they follow the same phonological patterns as other words of the language. Some sound-based labels, such as /æ/ for a, do not; normal English words never end with short vowels. Informal and formal instruction that stresses letter names as opposed to sounds leads to different patterns of performance and different types of errors for young learners of English. However, one set of practices does not make mastering this complex writing system markedly easier than the other" (p.485-486).

Treiman, R., Stothard, S.E., & Snowling, M.J. (2013). Instruction matters: Spelling of vowels by children in England and the US. *Reading and Writing, 26*(3), 473-487.

"Background: Our ability to look at structure and function of a living brain has increased exponentially since the early 1970s. Many studies of developmental disorders now routinely include a brain imaging or electrophysiological component. Amid current enthusiasm for applications of neuroscience to educational interventions, we need to pause to consider what neuroimaging data can tell us. Images of brain activity are seductive, and have been used to give credibility to commercial interventions, yet we have only a limited idea of what the brain bases of language disorders are, let alone how to alter them. Scope and findings: A review of six studies of neuroimaging correlates of language intervention found recurring methodological problems: lack of an adequate control group, inadequate power, incomplete reporting of data, no correction for multiple comparisons, data dredging and failure to analyse treatment effects appropriately. In addition, there is a tendency to regard neuroimaging data as more meaningful than behavioural data, even though it is behaviour that interventions aim to alter. Conclusion: In our current state of knowledge, it would be better to spend research funds doing welldesigned trials of behavioural treatment to establish which methods are effective, rather than rushing headlong into functional imaging studies of unproven treatments" (p.247).

"The impression is that the field is trying to run before it can walk. Our first priority should be to first develop interventions for children with language impairments and other neurodevelopmental disorders, and to produce good evidence of their efficacy using randomized controlled trials. Second, we also need to do far more methodological work to ensure our neuroimaging tools are as reliable, sensitive and standardized as our behavioural measures (Dichter et al., 2012). Third, we will need to develop multicentre collaborations to do studies with adequate statistical power to detect treatment effects. Only then will we be in a strong position to combine neuroimaging with intervention to answer questions about underlying mechanisms of effective intervention" (p.257).

Bishop, D. V. M. (2012). Neuroscientific studies of intervention for language impairment in children: interpretive and methodological problems. Research Review: Emanuel Miller Memorial Lecture 2012. *Journal of Child Psychology and Psychiatry, 54*(3), 247–259.

"Letter knowledge is a strong predictor of individual differences in early word reading skills. For example Bond and Dyjkstra (1967) reported correlations varying between .5 and .6 for letter knowledge assessed at the beginning of first grade and word identification skills measured at the end of the school year; Muter et al. (2004) reported a correlation of .35 between letter knowledge assessed at the beginning of Year 1 and reading skills assessed 1 year later. High correlations between letter knowledge and later decoding skills are also reported in other longitudinal studies (Badian, 1998; Roth, Speece, & Cooper 2002; Stephenson, Parrila, Georgiou, & Kirby, 2008). Studies differ in whether they assess letter–name or letter–sound knowledge. In the United States, typically children are taught letter names first (Treiman, Pennington, Shriberg, & Boada, 2008), and U.S. studies typically report relationships between letter–name knowledge and reading ability (e.g., Bond & Dyjkstra, 1967). Conversely, in the United Kingdom and many other European countries, **letter sounds are usually taught before letter names,** and accordingly studies in these countries often report measures of letter–sound knowledge. Many studies do not distinguish between letter–name and letter–sound knowledge and report a composite measure of both skills (Lervåg et al.,

2009; Muter et al., 2004). A small number of studies (e.g., Caravolas, Hulme, & Snowling, 2001; McBride-Chang, 1999) have reported separate measures of letter–name and letter–sound knowledge from the same children, and in those studies both measures (name and sound knowledge) are typically correlates of reading ability. Concurrent measures of letter–name and letter–sound knowledge typically correlate moderately with each other (.43–.80 at different time points in McBride-Chang, 1999, and Caravolas et al., 2001), and both measures typically correlate with reading ability, with letter–sound knowledge tending to show the stronger relationship (Caravolas et al., 2001; McBride-Chang, 1999)" (p.4).

Melby-Lervåg, M., Lyster, S.-A. H., & Hulme, C. (2012, January 16). Phonological skills and their role in learning to read: A meta-analytic review. *Psychological Bulletin*. Advance online publication. doi: 10.1037/a0026744

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**3.35** However, as with the early intervention studies, even the most effective intervention programmes do not lead to significant reading gains for *all* of the participating children and depending on the reading skills measured, from 15 to 60% of older pupils with dyslexia may fail to respond [i.e., scores falling below the 30th percentile](p.70).

Rose, J. (2009). *Identifying and teaching children and young people with dyslexia and literacy difficulties*. An independent report from Sir Jim Rose to the Secretary of State for Children, Schools and Families, June 2009. Retrieved from dera.ioe.ac.uk/14790/1/00659-2009DOM-EN.pdf

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A US review of the effectiveness of early intervention suggests that between 11% and 35% may show a poor response.

Torgesen, J.K. (2002). The prevention of reading difficulties. *Journal of School Psychology, 40,* 7-26.

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Literate cultural capital is a generic term referring to literacy-related knowledge and abilities at school entry that are an outgrowth of activities in the home environment that support early literacy development (Chapman et al., 2012)

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"Developmental dyslexia is a reading disorder, yet deficits also manifest in the magnocellular-dominated dorsal visual system. Uncertainty about whether visual deficits are causal or consequential to reading disability encumbers accurate identification and appropriate treatment of this common learning disability. Using fMRI, we demonstrate in typical readers a relationship between reading ability and activity in area V5/MT during visual motion processing and, as expected, also found lower V5/MT activity for dyslexic children compared to age- matched controls. However, when dyslexics were matched to younger controls on reading ability, no differences emerged, suggesting that weakness in V5/MT may not be causal to dyslexia. To further test for causality, dyslexics underwent a phonological-based reading intervention. Surprisingly, V5/MT activity increased along with intervention-driven reading gains, demonstrating that activity here is mobilized through reading. Our results provide strong evidence **that visual magnocellular dysfunction is not causal to dyslexia but may instead be consequential to impoverished reading**" (p.1).

Olulade, O. A., Napoliello, E. M., & Eden, G. F. (2013). Abnormal visual motion processing is not a cause of dyslexia. *Neuron, 79,* 1-11.

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"Text level as determined by running records appears to be an unreliable measure that yields inflated estimates of reading achievement (Authors, 2003; Blaiklock, 2004; Elbaum, Vaughn, Hughes, & Moody, 2000; Hiebert, 1994)."

Blaiklock, K. E. (1997). Bring back the Burt: Some comments on the value of word recognition tests for the assessment of reading. *New Zealand Reading Forum, 2,* 13-16.

Elbaum, B., Vaughn, S., Hughes, M., & Moody, S. (2000). How effective are one-to-one tutoring programs in reading for elementary students at risk for reading failure? A meta-analysis of the intervention research. *Journal of Educational Psychology, 92*, 605-619.

Hiebert, E. H. (1994). Reading Recovery in the United States: What difference does it make to an age cohort? *Educational Researcher, 23*, 15-25.

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Nationally, the percentage of 3- to 21-year-old students with learning disabilities dropped from 6.1 percent in 2000 to 4.9 percent in 2010 … Gene Lenz, director of federal and state education policy for the Texas Education Agency says Texas has moved away from over-diagnosing students. At one point, children may have been sent to special education because of the color of their skin, he said. Now, every effort is made to refer students only after they fail to respond to intervention. "Districts are taking care to make sure that's 100 percent true before they place a label on a child," Lenz said.

Radcliffe, J. (2012). Experts can't explain drop in state's special education numbers. Houston Chronicle, 4/7/2012. Retrieved from http://www.chron.com/news/houston-texas/article/Experts-can-t-explain-drop-in-state-s-special-3684502.php

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"The Peter Effect is based on the biblical story of the Apostle Peter, who when asked for money by a beggar replied that he could not give what he himself did not have (Acts 3:5). Applegate and Applegate (2004) applied the principle of the Peter Effect as an explanation to their findings from an investigation of teacher candidates' attitudes toward enjoyment of reading. Findings revealed that 54.3% of 195 teacher candidates were classified as unenthusiastic about reading and only 25.2% of teacher candidates reported unqualified enjoyment of reading. In the present study, we hypothesized not only that can teachers not pass on an enthusiasm for reading when they do not possess it but also that teachers cannot pass on understanding of the basic language constructs considered essential for early reading success when they do not possess that understanding" (p.526-7).

"Although a lack of teacher expertise in basic language constructs has been demonstrated in previous studies, little research has focused on the knowledge and abilities of the teachers of teachers. This study addressed an area of research that could be vital to improving the high incidence of reading difficulties and low reading achievement seen in U.S. schools today—the level of understanding of those teaching our teachers. The results of this study showed that teacher educators do not possess a good understanding of basic language constructs (also see Joshi, Binks, Hougen, Dahlgren, et al., 2009). This may be at least one reason for poor teacher understanding—as teacher educators cannot give what they themselves do not possess. Effective teaching is the best weapon against reading failure, and, in order for preservice teacher preparation to be improved, an increase in teacher educators' understanding of the critical basic language constructs of reading is needed" (p.534-5).

Binks-Cantrell, E., Washburn, E.K., Joshi, R.M., & Hougen, M. (2012): Peter Effect in the preparation of reading teachers. *Scientific Studies of Reading, 16*(6), 526-536.

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"*Spelling Mastery* represents a third example of an explicit, whole-word approach to spelling instruction. For high frequency, irregular words that cannot be spelled by applying phonemic rules, *Spelling Mastery* uses an explicit wholeword approach to spelling instruction. A typical whole-word lesson in *Spelling Mastery* begins by introducing students to a sentence that contains irregular words (e.g., *I thought he was through.*). At first the unpredictable letters or letter combinations are provided and students must fill in the missing letters (e.g., _ _ _ *ough* _ _ _ _ *a* _ _ _ _ *ough*). Presenting the irregular words in this way teaches the students that even irregular words have some predictable elements. Gradually, the number of provided letters is decreased until students are able to spell all the words without visual prompts. Once the sentence is learned, variations are presented so that students can apply the spelling of irregular words to various sentence contexts (e.g., *She thought about her homework throughout the night.*). This explicit approach to whole-word spelling instruction leads students through gradual steps toward the ultimate goal of accurate spelling performance" (p.100).

Simonsen, F., & Gunter, L. (2001). Best practices in spelling instruction: A research summary. *Journal of Direct Instruction, 1*(2), 97–105.

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"Although the interventions used in this study, Reading Mastery and Corrective Reading were not specifically designed for use by non-teachers, the study demonstrated that that instructional assistants – when provided with training – were able to implement these scripted reading programs effectively, with benefits for students across reading skill subsets. Both of these programs, which had been previously evaluated for small-group and whole-class use (Stahl & Miller, 1989), include critical alphabetic, decoding, and fluency components identified for inclusion in effective early reading programs, and

incorporate features of effective instructional design (e.g., explicit skills instruction, teacher modelling, review cycles)" (p.310).

Vadasy, P.F. (2011). Supplemental reading instruction by paraeducators and tutors: Recent research and applications. In Rollanda E. O'Connor & Patricia F. Vadasy (Eds.). *Handbook of reading interventions.* New York: Guildford. (p.310).

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"In intervention research, treatment fidelity is defined as the strategies that monitor and enhance the accuracy and consistency of an intervention to ensure it is implemented as planned and that each component is delivered in a comparable manner to all study participants over time. Reviews of the literature in special education and other disciplines reveal that reports of treatment fidelity are limited" (p.121).

Smith, S.W., Daunic, A.P., & Taylor, G.G. (2007). Treatment fidelity in applied educational research: Expanding the adoption and application of measures to ensure evidence-based practice. *Education & Treatment of Children 30*(4), 121-134.

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"In a study by Eckert et al. (2006), CBM material was used as an indicator of students' mathematics and reading skills. Teachers were asked to estimate students' reading and mathematics level (mastery, instructional, or frustrational). This judgment was compared with students' actual reading and mathematics level as measured by the CBM material via percentage agreement. The results indicated that teachers overestimated students' performance across most mathematics skills and on reading material that was at or below grade level. Bates and Nettelbeck (2001) subtracted students' reading accuracy and reading comprehension scores on a standardized achievement test from teachers' predictions of these scores. Teachers generally overestimated the performance of the 6- to 8-year-old students; inspection of the difference scores revealed that this held to a greater extent for low-achieving readers than for average- and high-achieving students. In line with this result, Begeny et al. (2008) found that teachers' judgments of students with average to low oral reading fluency scores were rather inaccurate, and Feinberg and Shapiro (2003) reported that teachers generally overestimated the performance of low-achieving readers" (p.757).

Südkamp, A., Kaiser, J., & Möller, J. (2012). Accuracy of teachers' judgments of students' academic achievement: A meta-analysis. *Journal of Educational Psychology, 104*(3), 743-762.

*Begeny, J. C., Eckert, T. L., Montarello, S. A., & Storie, M. S. (2008). Teachers' perceptions of students' reading abilities: An examination of the relationship between teachers' judgments and students' performance across a continuum of rating methods. *School Psychology Quarterly, 23,* 43–55.

Feinberg, A. B., & Shapiro, E. S. (2003). Accuracy of teacher judgments in predicting oral reading fluency. *School Psychology Quarterly, 18,* 52–65.

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"Studies on the effects of grade retention— having to repeat a grade—on academic and psychosocial adjustment have a long history, dating from the early 20th century (Owings & Magliaro, 1998). The nearly unanimous conclusion from reviews of this research (for meta-analytic reviews, see Allen, Chen, Willson, & Hughes, 2009; Holmes, 1989; Jimerson, 2001a; for narrative reviews, see Jimerson, 2001b; Shepard, Smith, & Marion, 1996; Sipple, Killeen, & Monk, 2004) is that in terms of academic achievement, students retained in a grade fare the same as or worse than they would have if they had been promoted (p.603). … "These results suggest that had the students who were retained in first grade been promoted instead, they would have performed as well by the end of fifth grade on a well-validated, nationally standardized measure of reading and math achievement as they did" (p.615). … "These results extend previous research on retention effects. Using a more direct test of the effects of retention on students' performance relative to their grade mates, these results extend and refine those of Wu et al. (2008). Retention in first grade results in an initial increase in scores on a nationally standardized measure of reading and math achievement that dissipates beyond the repeat year and is lost by the time students are in fifth grade" (p.618).

Moser, S. E., West, S. G., & Hughes, J. N. (2012). Trajectories of math and reading achievement in low-achieving children in elementary school: Effects of early and later retention in grade. *Journal of Educational Psychology, 104*(3), 603-621.

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"Population estimates revealed that 13.4% of children could be classified as late-emerging poor readers. These children could be divided into those with problems in comprehension alone (52%), word reading alone (36%), or both (12%). Further results indicated that late-emerging poor readers often had a history of language and/or nonverbal cognitive impairments in kindergarten. Subtypes of poor readers also differed significantly in their profiles of language, early literacy, and nonverbal cognitive abilities in kindergarten" (p. 166.) … Furthermore, retrospective analyses showed that these children indeed had late-emerging problems, not late-identified problems. That is, late-emerging poor readers did not appear to have early reading problems that had been missed as a result of flaws in the identification process (e.g., overlooked due to their high intelligence, good behavior, or compensatory strategies), as had sometimes been assumed" (p.167).

Catts, H. W., Compton, D., Tomblin, J. B., & Bridges, M. S. (2012). Prevalence and nature of late-emerging poor readers. *Journal of Educational Psychology, 104*(1), 166-181.

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"It has been widely established that there is a link between externalizing problems and academic/cognitive deficits, but there is a lack of consensus regarding the cause of this relation. Some research supports the notion that academic and cognitive deficits lead children to display externalizing behavior (e.g., Halonen, Aunola, Ahonen, & Nurmi, 2006; Miles & Stipek, 2006), whereas other studies support the theory that externalizing behavior problems lead children to experience academic and cognitive difficulties (e.g., Jorm, Share, Matthews, & Maclean, 1986; McMichael, 1979; Palfrey, Levine, Walker, & Sullivan, 1985). In addition, there is empirical support for a reciprocal model whereby early academic/cognitive problems and externalizing behavior affect one another over time (e.g., Chen, Rubin, & Li, 1997; Morgan, Farkas, Tufis, & Sperling, 2008; Richman, Stevenson, & Graham, 1982; Trzesniewski, Moffitt, Caspi, Taylor, & Maughan, 2006). There is also other empirical evidence suggesting that third variables may account for the relation between academic/cognitive problems and externalizing problems (Fergusson & Lynskey, 1997). Much of the literature on the relation between academic/ cognitive and behavior problems has historically focused on elementary school children and adolescents; however, it is now understood that difficulties in these domains can be identified at early ages (Grimm, Steele, Mashburn, Burchinal, & Pianta, 2010)" (p.1).

Metcalfe, L. A., Harvey, E. A., & Laws, H. B. (2013). The longitudinal relation between academic/cognitive skills and externalizing behavior problems in preschool children. *Journal of Educational Psychology. 105*(1), 1-14.

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"Our data thus add to the literature on trait predictors of teacher success and confirm earlier findings that cognitive ability alone does not contribute systematically to success in the teaching profession (Bromme, 2001; Getzels & Jackson, 1963; Zumwalt & Craig, 2005). Thus, selection procedures for entry into teacher education that are based solely on this indicator may run the risk of rejecting candidates capable of developing the necessary knowledge, beliefs, motivation, and selfregulation (which we found to covary independently of general academic ability). This may pose a particular problem for education systems grappling with teacher shortages (p.13).

Kunter, M., Klusmann, U., Baumert, J., Richter, D., Voss, T., & Hachfeld, A. (2013, April 29). Professional Competence of teachers: Effects on instructional quality and student development. *Journal of Educational Psychology*, *105*(1), 1-16.

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Orthographic depth correlates with incidence of dyslexia (e.g., Wolf et al, 1994) and with word and nonword reading in typically developing children (Seymour et al. 2003). Syllabic complexity correlates with word decoding (Seymour et al, 2003).

|  | | Shallow | | | | Deep |
|---|---|---|---|---|---|---|
| **Simple** | Finnish | Greek<br>Italian<br>Spanish | | Portuguese | French | |
| **Complex** | | German<br>Norwegian<br>Icelandic | Dutch<br>Swedish | | Danish | English |

Figure: The relative orthographic depth of 13 languages and the complexity of their syllabic structure. From Willingham http://www.danielwillingham.com/1/category/reading/1.html

Seymour, P. H. K., Aro, M., & Erskine, J. M. (2003). Foundation literacy acquisition in European orthographies. *British Journal of Psychology, 94,* 143-174.

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"Effect sizes for all outcomes except oral reading fluency met criteria for substantive importance; however, many of the students in the intervention continued to struggle. An evaluation of cognitive profiles of adequate and inadequate responders was consistent with a continuum of severity (as opposed to qualitative differences), showing greater language and reading impairment prior to the intervention in students who were inadequate responders (p.1). … the results are consistent with prior studies of the cognitive attributes of Tier 2 adequate and inadequate responders, suggesting a continuum of severity corresponding with the level of reading ability at baseline. These results show little evidence of qualitative differences that might suggest differences in the type of intervention or alternative approaches to intervention other than a more intense focus on oral language development" (p.12).

Denton, C. A., Tolar, T. D., Fletcher, J. M., Barth, A. E., Vaughn, S., & Francis, D. J. (2013). Effects of Tier 3 Intervention for students with persistent reading difficulties and characteristics of inadequate responders. *Journal of Educational Psychology*, *105*(1), 1-16.

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"There is now a large, complex, and sometimes seemingly contradictory literature on the associations between different phonological skills and learning to read. This meta-analytic review substantially clarifies the patterns in this literature. It appears that phonemic skills measured in children at the earliest stages of learning to read are closely related to the early growth in children's word reading skills. We have argued that converging evidence from longitudinal and training studies suggests that this relationship may be a causal one, such that adequate phonemic skills may be one prerequisite for learning to read effectively. These effects seem to be essentially universal across the different alphabetic languages that have been studied. In contrast, the two other skills considered here (rime awareness and verbal short-term memory) are less closely correlated with individual differences in learning to read, and their relationships with reading seem to be explicable in terms of shared variance with phonemic skills. These findings have important applied implications" (p.21).

Melby-Lervåg, M., Lyster, S-A H., & Hulme, C. (2012). Phonological skills and their role in learning to read: A meta-analytic review. *Psychological Bulletin, 138*(2), 322-352.

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"An ostensible strength of WM training is that it provides a focused, theoretically motivated method through which broad cognitive change may be stimulated (Klingberg, 2010; Sternberg, 2008). However, contrary to the reports provided at the beginning of this article (and contrary to the claims of commercial providers), the present literature provides **insufficient evidence of its efficacy.** Our primary concerns regard the need for researchers to (a) include multiple measures of abilities of interest, (b) consistently measure near transfer with valid WM capacity tasks that differ from the method of training, (c) eliminate the use of no-contact control groups, and (d) ensure that when subjective measures of change are used, raters are blind to condition assignment. Until these controls are consistently applied, the meaningfulness of training effects cannot be evaluated (p.647).

Shipstead, Z., Redick, T. S., & Engle, R. W. (2012). Is working memory training effective? *Psychological Bulletin, 138*(4), 628-654.

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"Our meta-analysis supports Perfetti and Hart's (2001) proposal that the quality of representations in multiple domains (orthographic, phonological, semantic and/or lexical, sublexical) is important for successful word reading. Developmental research provides substantial evidence for this position" (p.786).
Taylor, J. S. H., Rastle, K., & Davis, M. H. (2013). Can cognitive models explain brain activation during word and pseudoword reading? A meta-analysis of 36 neuroimaging studies. *Psychological Bulletin, 139*(4), 766-791.

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"Preservice programs need to do their best to turn out capable, intentional, reflective teachers who have knowledge and skills that will be useful in any setting," Slavin says, "but don't count on this experience to gradually lead to reformed schools. For that, we need to reform the schools directly, as whole organizations, and then staff them with the best teachers we can find. As more schools use proven models, preservice programs will hopefully prepare their students to teach in schools using them."
Slavin, R. (2013). Preservice education and school reform. The Huff Post, 15 July. Retrieved from http://www.huffingtonpost.com/robert-e-slavin/preservice-education-and_b_3597785.html

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"Skilled language users have large vocabularies; there may be 20,000 or more words a skilled reader is familiar with in print" (p.6).
Coltheart, M. (2006). Dual route and connectionist models of reading: An overview. *London Review of Education, 4*(1), 5–17.

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Research shows that instruction geared to common learning characteristics can be more effective than instruction focused on individual differences (p.16).
Willingham, D.T., & Daniel, D. (2012). Teaching to what students have in common. *Educational Leadership, 69*(5), 16-21. Retrieved from http://www.ascd.org/publications/educational-leadership/feb12/vol69/num05/Teaching-to-What-Students-Have-in-Common.aspx

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Scholarly treatments have been positive about the prospects, but more sober, and most have taken a position that is broadly consistent with ours. They argue that neuroscience has been and will continue to be helpful to education — indeed, recent reviews show beyond doubt that this is true (e.g., Katzir & Paré-Blagoev, 2006 ) — but they argue that data from neuroscience must be funneled through a behavioral level of analysis (e.g., Bruer, 1997, 1998; Hirsh-Pasek & Bruer, 2007) or that neuroscience should be part of a broader approach to research in education, not the sole savior (e.g., Ansari & Coch, 2006 ; Byrnes & Fox, 1998; Fischer et al., 2007; Geake & Cooper, 2003 ) (p. 147).
Willingham, D.T., & Lloyd, J.W. (2007). How educational theories can use neuroscientific data. *Mind, Brain, and Education*, *1*(3), 140-149. Retrieved from http://www.danielwillingham.com/uploads/5/0/0/7/5007325/willingham__lloyd_2007.pdf

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Developmental dyslexia is a reading disorder, yet deficits also manifest in the magnocellular-dominated dorsal visual system. Uncertainty about whether visual deficits are causal or consequential to reading disability encumbers accurate identification and appropriate treatment of this common learning disability. Using fMRI, we demonstrate in typical readers a relationship between reading ability and activity in area V5/MT during visual motion processing and, as expected, also found lower V5/MT activity for dyslexic children compared to age-matched controls. However, when dyslexics were matched to younger controls on reading ability, no differences emerged, suggesting that weakness in V5/MT may not be causal to dyslexia. To further test for causality, dyslexics underwent a phonological-based reading intervention. Surprisingly, V5/MT activity increased along with intervention-driven reading gains, demonstrating that activity here is mobilized through reading. Our results provide strong evidence that visual magnocellular dysfunction is not causal to dyslexia but may instead be consequential to impoverished reading (p.1).

Having established that the visual magnocellular deficit is likely to be an epiphenomenon of dyslexia, we then provided the dyslexic children with a phonological-based reading intervention, which resulted in better reading ability, and, somewhat surprisingly, also in greater activity in right area V5/MT during

visual motion perception. This final result is important in that it reveals information about the mechanism by which phonological and visual deficits may come to coexist in dyslexia. Specifically, they do not support the above-mentioned models (Eden and Zeffiro, 1998; Ramus, 2004) that have argued that dyslexia is best described as a condition that gives rise to sensory deficits in addition to the language-based problem. Instead our results demonstrate that the acquisition of reading has a positive influence on magnocellular visual system function, as demonstrated by the increase in right V5/MT activity after reading gains in the dyslexics. Since dyslexia impedes reading acquisition, it is most likely that the differences in magnocellular function reported here and elsewhere between dyslexics and their typically reading peers may be attributed to their lower reading level and less reading experience. In other words, the magnocellular visual deficit is a consequence and not the cause of impoverished reading.

Several ideas have been put forward to explain the mechanism by which weaknesses in the magnocellular visual system might affect reading (Boden and Giaschi, 2007; Stein, 2001). It has been argued that the magnocellular system is involved in direction of visual attention, visual search, and eye movements and that these problems directly impact a person's ability to read accurately (Eden et al., 1994). However, since our results do not support a causal relationship, it becomes necessary to look at the other side of the same coin and consider how subdued magnocellular function in dyslexia might be a result of lower reading ability. For example, extensive eye movements associated with reading experience may serve to train processes linked to the dorsal magnocellular system such as oculomotor control, visual attention, and spatial position encoding (Boets et al., 2011). From this viewpoint, one can agree on a relationship between reading and magnocellular function, even if the precise mechanisms are not well understood. However, it is likely that learning to read is followed by changes in the magnocellular system and not vice versa. Further, this theory would hold that reading acquisition exerts an influence on the size of neurons in the magnocellular layers of the LGN, or the amount of activity in area V5/MT, with the degree of influence modulated by the amount of reading experience. This model provides a parsimonious account of the findings reported to date. …

It is important to keep in mind that reading is a uniquely human skill that is explicitly taught over several years of formal schooling. During this time, significant functional changes occur as a direct consequence of learning to read, as has been shown with fMRI (Gaillard et al., 2003; Schlaggar et al., 2002; Turkeltaub et al., 2003). However, reading does not have a sufficiently long evolutionary history that would reserve dedicated neural populations specifically to this skill. Therefore, reading makes use of brain areas that were most likely dedicated to other functions, an idea that has been captured in the ''neuronal recycling hypothesis'' (Dehaene et al., 2010). As such, the process of learning to read most likely results in diminishing of some skills, while at the same time promoting others. The consequential outcomes of reading acquisition have been elegantly revealed in studies contrasting literates with illiterates, demonstrating that the profound anatomical and physiological effects that learning to read has on the brain exist within and well beyond brain regions directly associated with reading (Carreiras et al., 2009). (p.185). Olulade, O. A., Napoliello, E. M., & Eden, G. F. (2013). Abnormal visual motion processing is not a cause of dyslexia. *Neuron, 79*(1), 180-190.

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"Stakeholders are debating the value of cognitively focused instruction for students who have not benefited from a skills-based approach. Much of the discussion, however, is occurring without recognition of research that has been conducted in the past 2 decades. In this article, we reviewed the research. Electronic databases and hard copies of scholarly journals were searched; 239 references were identified; and 50 pertinent studies were analyzed to determine the effects of cognitively focused instruction - delivered alone or in combination with academic instruction - on students described as demonstrating poor academic achievement, learning disabilities, or specific cognitive deficits. Findings suggest that several cognitive interventions accelerated low-achieving students' academic progress. Nevertheless, when the research is taken as a whole - when the pertinent studies and the interventions they describe are considered with regard to their content, quality, and results - we conclude that it does not support the use of cognitively focused instruction at this time" (p.263).

"Multiple research teams grappling with school-based implementations of RTI have independently demonstrated the veracity of this claim (e.g., Fuchs, Fuchs, & Compton, 2004; Vaughn et al., 2010). Extrapolating from their respective study samples, researchers have estimated that from 2% to 6% of the general population will not benefit from a skills-based approach when implemented by researchers (rather than by practitioners), suggesting these percentages are a conservative estimate. Thus, research (and common sense) promotes a view that if a child has not responded sufficiently to skills-based instruction at Tier 1, nor to a more intensive version at Tier 2, it makes little sense to "triple down" on the same approach at Tier 3. This raises the important question: If not a skills-based approach, then what?" (p.263)

Kearns, D., & Fuchs, D. (2013). Does cognitively focused instruction improve the academic performance of low-achieving students? *Exceptional Children, 79*(3), 263-290.

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"Many liberal educators hold that the primary goal for education is for children to become autonomous, to develop fully who they are in the classroom setting without having arbitrary, outside standards forced upon them.This is a very reasonable goal for people whose children are already participants in the culture and power and who have already internalized its codes."
In Stanley, N. (2003). *Florida Reading Quarterly, 40*(2), 12–18.
Delpit, L. (1988). "The silenced dialogue: Power and pedagogy in educating other people's children". *Harvard Educational Review, 58*(3), 280–298.
Delpit, L. (1988). "The silenced dialogue". *Harvard Educational Review, 58*(3), 280–299.

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"Given the small number of studies, the lack of methodological rigor of the existing studies, and the inconclusive findings of the effectiveness of OG programs, additional research is needed before the scientific basis can be established" (p.171).
Ritchey, K.D. & Goeke, J.L. (2006). Orton-Gillingham and Orton-Gillingham-based reading instruction: A review of the literature. *The Journal of Special Education, 40*(3), 171-183.

"No studies of unbranded Orton-Gillingham–based strategies that fall within the scope of the Students with Learning Disabilities review protocol meet What Works Clearinghouse (WWC) evidence standards. The lack of studies meeting WWC evidence standards means that, at this time, the WWC is unable to draw any conclusions based on research about the effectiveness or ineffectiveness of unbranded Orton-Gillingham–based strategies for students with learning disabilities" (p.2). What Works Clearinghouse (2010). *Unbranded Orton-Gillingham-based interventions.* Retrieved from *Unbranded Orton-Gillingham-based interventions* http://ies.ed.gov/ncee/wwc/interventionreport.aspx?sid=528

"We must conclude that, although the Orton-Gillingham Approach contains many of the characteristics of effective intervention programs that have been identified in scientifically based research on reading, there are no studies available at present to provide an estimate of its impact on the reading growth of young children" (p.2). (Florida Center for Reading Research, 2006).
http://www.nayattschool.org/Document%20Library/Response%20to%20Intervention--Orton_Gillingham_Approach.pdf.

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Neither creating more competition among schools nor giving them more autonomy without support to improve learning are the vital solutions that will lift the performance of Australian students.
The myth of markets in school education shows that at least 40 to 60 per cent of schools face no or very limited competition, and there is very little government can do about it.
Providing more information about schools, cutting private school fees or increasing the capacity of high-performing government schools will do little to increase school competition and lift student performance. Giving school leaders autonomy to run their schools well is a good idea, but it has little impact on performance when governments do not implement it as part of a larger plan to improve teaching and learning.
The report is the first analysis of a 20-year policy in some Australian school systems to give schools more autonomy and to try to increase competition among them. These systems have led the world and influenced many countries but the evidence of an increase in student performance through market-based and pro-autonomy policies is not there.

One problem is that not enough schools have local competitors that have the capacity to take on new students, are good performers, and are affordable. Even when parents have good information about differences between schools, the good ones don't grow and bad ones don't shrink.

And the link between school autonomy and high performance is weak. Victoria, which led the world in increasing autonomy, has not performed above New South Wales, which was centralised until recently. The world's best systems have varying levels of autonomy but they all articulate the best way to teach and learn, then make sure they have the best teachers to carry it out.

Autonomy and competition are often linked in government policy because autonomy can allow schools to differentiate themselves and thereby attract parents from competing schools. The myth of markets shows that neither competition nor an excessive focus on autonomy is the best way to improve Australian schools.

Jensen, B. (2013). The myth of markets in school education. Grattan Institute. Retrieved from http://grattan.edu.au/publications/reports/post/the-myth-of-markets-in-school-education/

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11. The provision for secondary age children with persistent reading difficulties calls for greater attention. Despite differences in school organisation, the same principles embodied in 'Simple View of Reading' and the three Waves of Provision for children with literacy difficulties should apply in secondary schools, as they do in primary schools. However, it is well known that the nature of the problems for secondary aged children who have experienced repeated failure with reading often include negative attitudes and disengagement that are much more entrenched than in primary schools. Additional support for those children starting secondary school without secure reading skills is essential if they are to make progress and not fall further behind their peers (p.13).

Rose, J. (2009). *Identifying and teaching children and young people with dyslexia and literacy difficulties*. An independent report from Sir Jim Rose to the Secretary of State for Children, Schools and Families. Retrieved from www.dera.ioe.ac.uk/14790/1/00659-2009DOM-EN.pdf

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My sense is that the expectation that educational research should regulate classroom instruction, emblematic of broader trends in reading instruction, reveals a profound disrespect for the pedagogical knowledge and professional preparation of teachers and a concomitant desire to control their work (p.272-3).

Dudley-Marling, C. (2005). Disrespecting teachers: Troubling developments in reading instruction. *English Education, 37*(4), 272-279.

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Stakeholders are debating the value of cognitively focused instruction for students who have not benefited from a skills-based approach. Much of the discussion, however, is occurring without recognition of research that has been conducted in the past 2 decades. In this article, we reviewed the research. Electronic databases and hard copies of scholarly journals were searched; 239 references were identified; and 50 pertinent studies were analyzed to determine the effects of cognitively focused instruction - delivered alone or in combination with academic instruction - on students described as demonstrating poor academic achievement, learning disabilities, or specific cognitive deficits. Findings suggest that several cognitive interventions accelerated low-achieving students' academic progress. Nevertheless, when the research is taken as a whole - when the pertinent studies and the interventions they describe are considered with regard to their content, quality, and results - we conclude that it does not support the use of cognitively focused instruction at this time. Implications for future research are discussed (p.263).

Kearns, D. M., & Fuchs, D. (2013). Does cognitively focused instruction improve the academic performance of low-achieving students? *Exceptional Children, 79*, 263-290.

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Book, Byers, and Freeman (1983) reported that entering prospective teachers believed that improving student self concept was a more worthy goal than promoting students' academic achievement or creating a good learning environment.

Book, C., Byers, J., &Freeman, D. (1983). Student expectations and teacher education traditions with which we can and cannot live. *Journal of Teacher Education, 34*, 9-13.

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A few studies have evaluated whether poor reading performance negatively impacts "distal" feelings and behaviors that are not specific to reading activities. In these studies, poor readers have been reported to be more likely to act out or be aggressive (e.g., Morgan, Farkas, & Wu, 2009; Trzesniewski, Moffitt, Caspi, Taylor, & Maughan, 2006), distractible and inattentive (Goldston et al., 2007; Morgan, Farkas, Tufis, & Sperling, 2008), and anxious and depressed (Arnold et al., 2005; Carroll, Maughan, Goodman, & Meltzer, 2005). Older poor readers have been reported to be more likely to consider or attempt suicide (Daniel et al., 2006)

The increasingly generalized Matthew effects are more likely to occur as children age (Stanovich, 1986) if they begin to avoid reading activities both at home and in school, thereby further constraining growth in their basic reading skills, comprehension, and, eventually, cognitive functioning (Cunningham & Stanovich, 1991; Echols, West, Stanovich, & Zehr, 1996; Griffiths & Snowling, 2002; Guthrie, Schafer, & Huang, 2001; Senechal, LeFevre, Hudson, & Lawson, 1996). The children's resulting inability to meet their classroom's academic demands can lead to increasingly frequent feelings of frustration, agitation, withdrawal, and social isolation (e.g., Fleming, Harachi, Cortes, Abbott, & Catalano, 2004; Kellam, Mayer, Rebok, & Hawkins, 1998; Lane, Beebe-Frankenberger, Lambros, & Pierson, 2001; Wehby, Falk, Barton-Arwood, Lane, & Cooley, 2003). These feelings and behaviors may in turn further interfere with children's learning (p.361).

We investigated whether and to what extent being a poor reader increases a child's likelihood of reporting feeling angry, distractible, sad, lonely, anxious, and unpopular. Poor reading performance has repeatedly been hypothesized to contribute to children's socioemotional maladjustment (e.g., Stanovich, 1986). Although there is some evidence indicating that poor reading performance results in "proximal" negative Matthew effects (e.g., poorer attitude toward reading, less persistence during reading tasks, less independent reading practice), less is known about the "distal" or more generalized effects on socioemotional maladjustment (e.g., frequently feeling angry, sad, or unpopular). To better estimate these predicted relationships, we statistically controlled for a range of child-, family-, school-, and community-level confounds including the autoregressor. Multilevel logistic regression analyses indicated that poor readers are at substantially greater risk of socioemotional maladjustment. This was the case across multiple self-report measures as well as after extensive statistical control of possible confounding factors (p.373).
Morgan, P.L., Farkas, G., & Qiong, W. (2012). Do poor readers feel angry, sad, and unpopular? *Scientific Studies of Reading, 16*(4), 360-381.

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Print awareness, phonological awareness, and decoding have each been shown to be influenced by genetic and environmental factors in prereaders and early readers. Measures of print awareness tend to be modestly affected by genetic factors (heritability estimates less than 30%) and more substantially influenced by environmental factors. For example, a composite measure of print knowledge in preschoolers in the International Longitudinal Twin Study (ILTS; Byrne et al., 2002) showed a shared environmental influence that was roughly twice the magnitude of the genetic influence. A similar outcome was found for letter identification in kindergarten and first-grade twins (*M* age=6.1) in the Western Reserve Reading Project (WRRP; Petrill et al., 2006). In a sample of kindergarteners in the Florida Twin Project on Reading (FTP-R), Taylor and Schatschneider (2010) found that letter naming fluency had approximately equivalent influences of genetic, shared environmental, and nonshared environmental influences.

In contrast, moderately high heritability estimates (50%–65%) have been found for phonological awareness across various studies of first- and secondgrade children (Byrne et al., 2002; Hohnen & Stevenson, 1999) and for a latent phonological awareness factor in kindergarten (Byrne et al., 2005). Shared environmental influences on phonological awareness in these studies were moderately low but nonetheless larger than the estimate of nonshared environment. The WRRP sample showed similar estimates of genetic and shared environmental influences (.48 and .43, respectively; Petrill et al., 2006) as did the FTP-R, although with estimates of genetic and shared environment both in the 20% to 40% range (Taylor & Schatschneider, 2010). The genetic effects on decoding pseudowords and words are substantial in early readers as compared to environmental effects. High heritabilities were found in a sample of 7-year-olds participating in the Twins Early Development Study (Kovas, Haworth, Dale, & Plomin, 2007) on both nonword reading (.67) and word reading (.69), whereas shared environmental influences were minimal (.15 and .13, respectively). In the WRRP sample, about half of the variability in decoding pseudowords (.49) was due to genetic factors, with a moderate effect of shared environment (.31; Petrill et al., 2006). In

contrast, genetic effects on reading words (.68) were substantial, whereas shared environment was much less so (.22). Hohnen and Stevenson (1999) reported heritabilities of .60 and .59 on a literacy composite for 6- and 7-year-old children, respectively. Conversely, shared environmental influences were more modest (.36 and .32, respectively). A latent factor of reading that included both words and nonwords was highly heritable (.70) with only modest shared environment effects (.22) in the ILTS kindergarten sample (Byrne et al., 2005) (p.459).

Soden-Hensler, B., Taylor, J., & Schatschneider, C. (2012). Evidence for common etiological influences on early literacy skills in kindergarten. *Scientific Studies of Reading, 16*(5), 457-474.

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In one of the first studies of teacher knowledge, experienced reading, language arts, and special education teachers were assessed in their awareness of language elements (e.g., phonemes and morphemes) and how these elements were represented in writing (e.g., knowledge of sound–symbol correspondences; Moats, 1994). The results indicated that even highly motivated and experienced teachers generally had a poor understanding about spoken and written language structure. A second study found that teachers had "insufficiently developed concepts about language and pervasive conceptual weaknesses in the very skills that are needed for direct, systematic, language-focused reading instruction, such as the ability to count phonemes and to identify phonic relationships" (Moats & Lyon, 1996, p. 79). More recently, Moats and Foorman (2003) reported that teachers continued to struggle particularly with (a) manipulating speech sounds; (b) knowledge of differing letter-sound combinations; (c) conceptualization of functional spelling units such as digraphs, blends, and silent-letter spellings; (d) common syllable types and division patterns; and (e) recognition of children's difficulties with phonological, orthographic, and syntactic learning. Similarly, Spear-Swerling and Brucker (2003) found that none of the elementary and special education teacher participants scored at a high level on all of the tasks assessing knowledge of reading constructs and very few scored a high level on any task. Further, none had received intensive preparation in structured and systematic phonics instruction. Cunningham, Perry, Stanovich, and Stanovich (2004) in turn found that not only did K–3 teachers know very little about phonemic awareness and phonics, but also teachers were often unable to calibrate their knowledge of reading. These findings are also not specific to inservice teachers or to the United States. Bos et al. (2001) reported that 53% of teacher candidates and 60% of inservice educators were unable to correctly answer nearly half of the items assessing their knowledge of language structure. Although teachers indicated that they believe such reading instructional practices were important, their knowledge in such "important" practices was lacking (Bos et al., 2001). Similarly, teachers in Australia demonstrated a poor knowledge of the role of metalinguistics in the process of learning to read (Fielding-Barnsley & Purdie, 2005). Further, even though there were some differences in the patterns of understanding between the two populations, teacher candidates from both the United States and England demonstrated an insufficient understanding of English phonology, phonics, and morphology needed to effectively teach early reading skills (Binks, Joshi, & Washburn, 2009). Furthermore, Washburn, Joshi, and Binks-Cantrell (2011a, 2011b) found that a majority of teacher candidates and inservice teachers reported misconceptions about dyslexia in conjunction with weak explicit knowledge about phonology, phonetics, and morphology (p.527-8).

Binks-Cantrell, E., Washburn, E.K., Joshi, R.M., & Hougen, M. (2012). Peter Effect in the preparation of reading teachers. *Scientific Studies of Reading, 16*(6), 526-536.

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A commonly held view of early phonological development and alphabetic literacy has been that phonological awareness proceeds from large units—namely, syllables—to awareness of small units or phonemes (Carroll, Snowling, Hulme, & Stevenson, 2003; Treiman & Breaux, 1982). It has been proposed that in order to abstract the principles of the alphabetic system, children need to develop both phoneme awareness and letter knowledge (Byrne, 1998; Share, 1995). However, an alternative view is that phoneme awareness is a consequence rather than a precursor of learning to read (Castles & Coltheart, 2004; Goswami & Bryant, 1990; Morais, Carey, Alegria, & Bertelson, 1979). Much of the debate regarding the causal relations between phoneme awareness and reading skills draws on evidence from readers of alphabetic languages (Hulme, Snowling, Caravolas, & Carroll 2005; Mann & Wimmer, 2002). Within such languages, the rate of development of phoneme awareness and of decoding skills varies with the consistency of the orthography, readers of more consistent orthographies gaining competence more quickly than readers of English (Seymour, Aro, & Erskine, 2003). Thus, phoneme awareness plays a time-limited

role as a predictor of individual differences in consistent orthographies (de Jong & van der Leij, 2003), whereas in English it continues to predict reading skill throughout development (Bruck, 1992; McDougall, Hulme, Ellis, & Monk, 1994; Muter, Hulme, Snowling, & Stevenson, 2004). Such findings favour the idea of reciprocal causation whereby phoneme awareness, letter knowledge, and reading skills interact in the process of learning to read and phoneme awareness develops rapidly in readers who primarily encounter consistent grapheme–phoneme relationships (p.405).

Nag, S., & Snowling, M.J. (2012). Reading in an alphasyllabary: Implications for a language universal theory of learning to read. *Scientific Studies of Reading, 16*(5), 404-423.

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Individual differences in phonological awareness are closely related, concurrently and longitudinally, to variations in reading achievement (e.g., Lonigan, Burgess, & Anthony, 2000; Muter, Hulme, Snowling, & Stevenson, 2004; Wagner et al., 1997). Evidence supporting a causal role of phonological awareness in reading development comes from studies showing that training phonological awareness improves reading (e.g., Lundberg, Frost, & Petersen, 1988; Schneider, Küspert, Roth, Visé, & Marx, 1997; but see also Castles & Coltheart, 2004; Hulme, Snowling, Caravolas, & Carroll, 2005). The relationship between semantic knowledge and learning to read words is less well understood. However, evidence suggests that semantic effects on single word reading tend to be greatest when mapping between orthography and phonology is least efficient, that is, in young or poor readers (Briggs, Austin, & Underwood, 1984; Coltheart, Laxon, & Keating, 1988; Nation & Snowling, 1998) and for inconsistent or infrequent words (Juel, 1980; Stanovich & West, 1983; Strain, Patterson, & Seidenberg, 2002). (p.505).

Duff, F.J., & Hulme, C. (2012): The role of children's phonological and semantic knowledge in learning to read words. *Scientific Studies of Reading, 16*(6), 504-525.

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The National Assessment of Educational Progress (NAEP; National Center for Education Statistics, 2009) shows that approximately 35% of a fourth-grade cohort fails to attain the basic level, while an additional 32% fails to reach the proficient level that is the goal for all students. Our analyses of the texts that have been used on these assessments indicate that they are at approximately a 3.5 grade level according to conventional readability formulas. The text on the NAEP, then, is not the complex text that is emphasized within the Common Core Standards (Common Core State Standards Initiative, 2010) (p.112) …

Hiebert, E.H., Samuels, S.J., & Rasinski, T. (2012). Comprehension-based silent reading rates: what do we know? What do we need to know? *Literacy Research and Instruction, 51*(2), 110-124.

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There has been a large body of literature on the relationship between oral reading performances (without comprehension and measured as words correct per minute [wcpm]) and performances on silent reading tests, which have included standardized reading tests and state standards-based tests (Good, Simmons, & Kame'enui, 2001; McGlinchey & Hixson, 2004; Schatschneider et al., 2004). In Marston's (1989) review of such studies, the correlations were between .63 and .90 with the most clustering around .80. In Good and Jefferson's (1998) review of the correlations within a single grade (grade 3), the correlations ranged from .60 to .80. Wiley and Deno (2005) and Pressley, Hildren, and Shankland (2005) have reported lower correlations (.40 to .50). This finding of a high correlation between wcpm in oral reading and comprehension has had a strong influence on policy and practice in reading education (p.112-113).

Hiebert, E.H., Samuels, S.J., & Rasinski, T. (2012). Comprehension-based silent reading rates: what do we know? What do we need to know? *Literacy Research and Instruction, 51*(2), 110-124.

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The inclusion of a simple, word recognition-timed task in an assessment battery affords important diagnostic possibilities. For example, attending just to the relationship between word recognition-timed and oral reading rate, we might envision four types of readers or print processors.

1. *Good WR-t—good ORR*. At a given difficulty level, an adequate reading rate is supported by a strong sight vocabulary or store of automatically recognized words.

2. *Poor WR-t—poor ORR*. Slow, possibly inaccurate, reading is caused by a weak sight vocabulary.

3. *Poor WR-t—good ORR*. An adequate reading rate is achieved by skillfully using context to compensate for a weak sight vocabulary. As reading material becomes more difficult in later grades, the weak sight vocabulary (or orthographic system) may become a serious hindrance to efficient print processing.

4. *Good WR-t—poor ORR*. Underlying a slow, inadequate reading rate is a surprisingly strong sight vocabulary. It is as if the child reads words more easily in isolation than in context. Such a "patterning"

problem indicates difficulty mapping the temporal flow of language to its printed representation on the page (Morris, 2008).

Instructional implications obviously follow from these hypothesized case types. Whereas some form of word study or phonics instruction might be appropriate for cases 2 and 3, this would not be true for case 4 where the problem seems to be contextually-based as opposed to word-based (p.61).

Morris, D., Trathen, W., Frye, E.M., Kucan, L., Ward, D., Schlagal, R., & Hendrix, M. (2013): The role of reading rate in the informal assessment of reading ability. *Literacy Research and Instruction, 52*(1), 52-64.

That is, we believe that reading rate (words read per minute), *if recorded in a reading-for-meaning context*, is an efficient and valid measure of fluency. Hendrix, Trathen, and Morris (2008) reported correlations approaching .90 among three measures of fourth grade students' reading fluency: fluency rating-scale score, prosody score (number of pauses), and reading rate (see also, Daane, Campbell, Grigg, Goodman, & Oranje, 2005) (p.53). … At a given grade level (e.g., fourth), how slowly can a child read and still benefit from instruction and practice at that level? With this question in mind, we propose the following end-of-grade rate *minimums.*• Second Grade: 80 wpm - • Third Grade: 90 wpm - • Fourth Grade: 100 wpm - • Fifth Grade: 105 wpm - • Sixth Grade: 110 wpm (p.58). … Regarding oral reading accuracy, craft knowledge, passed down over the years, has held that students should be instructed at a level where they miss no more than 5 words out of 100 in running text (Betts, 1946; Johnson et al., 1987; McKenna & Stahl, 2003). … comprehension scores in the present study (see Table 2) fell within the traditionally accepted IRI range of 75 to 90% (Betts, 1946, Johnson et al., 1987; Barr et al., 2007) (p.59). … In large part, but not wholly, fluent reading depends on automatic word recognition (Adams, 1990; Rayner, Foorman, Perfetti, Pesetsky, & Seidenberg, 2001). Therefore, we should not be surprised to find that an isolated measure of automatic word recognition (WR-t) is a good predictor of oral reading rate (ORR) (p.60-61).

Morris, D., Trathen, W., Frye, E.M., Kucan, L., Ward, D., Schlagal, R., & Hendrix, M. (2013): The role of reading rate in the informal assessment of reading ability. *Literacy Research and Instruction, 52*(1), 52-64.

Research has consistently demonstrated the importance of a well-prepared teacher to profoundly influence student reading achievement (Darling-Hammond, 2004, 2006; Rowan, Correnti, & Miller, 2002; Sanders & Horn, 1994). Therefore, training highly effective and competent reading teachers is of utmost importance. Currently, almost 50% of all public school teachers in the United States are inexperienced, novice teachers (National Education Association, 2003), with limited knowledge and expertise regarding topics such as phonics and word study (Mather, Bos, & Babur, 2001), thus entering the profession with knowledge limitations about how to provide effective evidence-based literacy instruction. Furthermore, beginning teachers are teaching a more diverse group of students than ever before and are likely at some point in their careers to spend time teaching in high-poverty and lowachieving schools (Valencia, Place, Martin, & Grossman, 2006). Professional teaching is a field plagued with unrelenting public criticism regarding its effectiveness (Walsh, Glaser, & Dunne-Wilcox, 2006;Wold, Young, & Risko, 2011), is pressured by federal mandates such as *No Child Left Behind* and more recently the *Common Core State Standards Initiative* (CCSSI, 2010), and divided by a history about *how* teachers should teach young children to read (Pearson, 2004). As a consequence, educating highly proficient reading teachers is an increasingly challenging and complex endeavour (p.87).

Clark, S.K., Jones, C.D., Reutzel, R., & Andreasen, L. (2013). An examination of the influences of a teacher preparation program on beginning teachers' reading instruction. *Literacy Research and Instruction, 52*(2), 87-105.

Phelps and Schilling (2004) suggest three reasons for the lack of extensive inquiry into preservice teachers' development of content knowledge for reading. First, reading is not viewed as a separate discipline, but rather, is integrated into other disciplines. Second, although many elementary teachers may lack knowledge in science or mathematics, few individuals question teachers' knowledge of reading because most teachers are competent readers. Finally, there seems to be a greater concern with preservice teachers acquiring knowledge of methods and curriculum than there is with the specific content knowledge supporting reading instruction. Although preservice teachers' content knowledge and self efficacy for teaching reading are relatively new areas of research, there is a theoretical foundation on which research can be built. The purpose of this study was to examine preservice teachers' development and growth in

content knowledge and self-efficacy for teaching reading as they participated in a literacy course/reading clinic practicum experience.

Leader-Janssen, E.M., & Rankin-Erickson, J.L. (2013). Preservice teachers' content knowledge and self-efficacy for teaching reading. *Literacy Research and Instruction, 52*(3), 204-229.

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In a recent study, Swanson and O'Connor (2009) found that in addition to word attack skills, working memory capacity moderated not only word identification and comprehension, but also fluency in children with reading disabilities. Phonological memory can be viewed as an indicator of working memory and Table 2 indicates a significant correlation between comprehension and phonological memory in the study population of .48 and that participants possess less than adequate skill in this domain (p.307). … The results of this study suggest, as do those by Kuhn and others (2006), that the critical factor for oral reading development in children with reading disabilities, including those with naming-speed deficits, is time-on-text, meaning simply that students from this population must spend significant time engaged in structured, monitored reading in order to develop the necessary automaticity in phonological and word identification sub-processes that are required for proficient reading.

Paige, D.D. (2011): Testing the acceleration hypothesis: Fluency outcomes utilizing still-versus accelerated-text in sixth-grade students with reading disabilities. *Literacy Research and Instruction, 50*(4), 294-312.

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**Recent Reviews of Vocabulary Research** In addition to the NRP report, six reviews and two meta-analyses of vocabulary instruction were published between 1998 and 2009 (Baker et al., 1998; Baumann, Kame'enui et al., 2003; Elleman et al., 2009; Harmon et al., 2005; Jitendra et al., 2004; Kuhn & Stahl, 1998; Read, 2004; Swanborn & de Glopper, 1999). The most recent meta-analysis, by Elleman et al., included 37 studies in prekindergarten to twelfth grade. Among the findings was that students with reading difficulties who were exposed to vocabulary instruction benefited three times as much as those who were not. The meta-analysis conducted by Swanborn and de Glopper examined incidental word learning. Kuhn and Stahl synthesized the research of learning words from context, whereas Baker et al. identified advances in the research on vocabulary development for diverse learners. Baumann, Kame'enui et al. categorized vocabulary strategies by their use: strategies for teaching specific words and strategies to learn words independently. The other vocabulary reviews focused on more restrictive populations or topics. For example, Read examined studies in second language learners' vocabulary instruction since 1999, and Harmon et al. identified several effective strategies for students struggling with content-area texts. Jitendra et al. highlighted the importance of choosing an instructional method based on instructional goals and the needs of individual students. However, none of these reviews highlighted the methodologies of the studies cited (p.254-55).

Hairrell, A., Rupley, W., & Simmons, D. (2011). The state of vocabulary research. Literacy Research and Instruction, 50(4), 253-271.

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"Americans hold the notion that good teaching comes through artful and spontaneous interactions with students during lessons. This kind of on-the-fly decision making is made possible by the innate intuitions of natural teachers. Such views minimize the importance of planning increasingly effective lessons and lend credence to the folk belief that good teachers are born, not made. If we really believe this, it is no wonder that teacher development is not a high priority" (Stigler & Hiebert, 1997, 16).

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This randomized control trial examined the efficacy of a multitiered supplemental tutoring program within a first-grade responsiveness-to-intervention prevention model. Struggling first-grade readers (n = 649) were screened and progress monitored at the start of the school year. Those identified as unresponsive to general education Tier 1 (n = 212) were randomly assigned to receive Tier 2 small-group supplemental tutoring (n = 134) or to continue in Tier 1 (n = 78). Progress-monitoring data were used to identify nonresponders to Tier 2 (n = 45), who were then randomly assigned to more Tier 2 tutoring (n = 21) or one-on-one Tier 3 tutoring (n = 24). Tutoring in Tier 3 was the same as in Tier 2 except for the delivery format and frequency of instruction. Results from a latent change analysis indicated nonresponders to Tier 1 who received supplemental tutoring made significantly higher word reading gains compared with controls who received reading instruction only in Tier 1 (effect size = 0.19). However, no differences were detected between nonresponders to Tier 2 who were assigned to Tier 3 versus more Tier 2. This suggests more frequent 1:1 delivery of a Tier 2 standard tutoring program may be insufficient for intensifying

intervention at Tier 3. Although supplemental tutoring was effective in bolstering reading performance of Tier 1 nonresponders, only 40% of all Tier 2 students and 53% of Tier 2 responders were reading in the normal range by grade 3. Results challenge the preventive intent of short-term, standard protocol, multitiered supplemental tutoring models.

Gilbert, J. K., Compton, D. L., Fuchs, D., Fuchs, L. S., Bouton, B., Barquero, L. A., & Cho, E. (2013). Efficacy of a first-grade responsiveness-to-intervention prevention model for struggling readers. *Reading Research Quarterly, 48*(2), 135.

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Torgerson et al. (2006) criticised the NRP report for including both RCT 'true experimental designs' and quasi-experimental studies in the same systematic review. Torgerson et al. (2006) completed an updated systematic review of research literature using phonics in the teaching of reading and spelling based exclusively on RCT or 'true experimental' studies. They concluded that there is scarce evidence from studies using high-quality RCT designs to investigate the long-term effects of different kinds of early reading instruction. They found only three studies formally contrasting synthetic and analytic phonics (namely, Johnston & Watson, 2004; Skailand, 1971; Torgesen et al., 1999). Overall, the Torgerson et al. (2006) review concludes that there is not enough clear evidence for one instructional method as better than the other for enabling children to make progress in reading accuracy. A pooled effect size of d50.02 across the three well-designed studies (Johnston & Watson, 2004; Skailand, 1971; Torgesen et al., 1999) was weak and nonsignificant (p.70).
Di Stasio, M.R., & Savage, R. (2012). A follow-up study of the ABRACADABRA web-based literacy intervention in Grade 1. *Journal of Research in Reading, 35*(1), 69–86.

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"She talks about her personal journey of discovering the brain's ability to change (neuroplasticity)" (p.1). http://www.arrowsmithschool.org/arrowsmithprogram/news.html

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For S-RCD (specific reading comprehension deficits), the context-dependent functional interaction anomaly was most prominently seen in left IFG, which covaried to a greater extent with hippocampal, parahippocampal, and prefrontal areas than for TD for low- as compared to high-frequency words. Given the greater lexical access demands of low frequency as compared to high-frequency words, these results may suggest specific **weaknesses in accessing lexical-semantic representations during word recognition**. These novel findings provide foundational insights into the nature of S-RCD, and set the stage for future investigations of this common, but understudied, reading disorder (p. 199).
Cutting, L.E., Clements-Stephens, A., Pugh, K.R., Burns, S., Cao, A., Pekar, J.J., Davis, N., & Rimrodt, S.L. (2013). Not all reading disabilities are dyslexia: Distinct neurobiology of specific comprehension deficits. *Brain Connect, 3*(2), 199-211.

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Many times over the course of the Teacher Prep Review as well as the 10 pilot studies that preceded it, we have asked ourselves what might explain the chaotic nature of the field of teacher preparation. Frankly, our earliest theories were simply wrong, and it was only late in the process that we stumbled across evidence that the field decided it was not its job to train teachers but to *prepare* them (p.93)

The "reading wars" are far from over. Three out of four elementary teacher preparation programs still are not teaching the methods of reading instruction that could substantially lower the number of children who never become proficient readers, from 30 percent to under 10 percent. Instead, the teacher candidate is all too often told to develop his or her "own unique approach" to teaching reading (p.2).
Greenberg, J., McKee. A., & Walsh, K. (2013). *NCTQ Teacher Prep Review.* National Council of Teacher Quality. Retrieved from http://www.nctq.org/dmsStage/Teacher_Prep_Review_2013_Report

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The DI model has enjoyed a more than 30-year history of framing successful learning experiences. The model has evolved to address current understandings about learners and learning, but maintains the central purpose of promoting student on-task behavior through explicit instruction, ongoing support, and student engagement in successful practice. The DI model is well suited to the design of technology-enhanced and technology-based instruction because of its clear structure and potential for providing learners with opportunities for practice and immediate feedback, especially in asynchronous learning environments. …

DI continues to hold potential as an effective teaching method, particularly in technology mediated learning environments. Computer-based programs have been designed to model instructor-led DI approaches while leveraging the technological ability to provide feedback, remediation, and guided practice, all essential components of the DI process and all of which contribute to its effectiveness (p.51).

DiMagliaro, S., Lockee, B., & Burton, J. (2005). Direct instruction revisited: A key model for instructional technology. *Educational Technology Research & Development, 53*(4), 41-55. Retrieved from http://projects.ict.usc.edu/itw/materials/Lockee/DI%20Revisited.pdf

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Word reading rate appears key to students' fluency deficits. It is the most important factor in text reading fluency (Torgesen & Hudson, 2006) and was found to be more highly predictive of reading comprehension than rate of connected text reading for average and below average comprehenders (Wise et al., 2010). The complex developmental time-course leading to fluency deficits supports the current focus on effective instruction, progress monitoring, and intervention in the earliest school years. At present it appears the most effective intervention for fluency is early intervention in phonemic awareness, phonemic decoding, and automaticity.

Metsala, J.L. (2012). Difficulties in word reading and fluency in English: Interventions. *Encyclopedia of Language and Literacy Development.* Retrieved from http://literacyencyclopedia.ca/index.php?fa=items.show&topicId=312

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Torgesen (2006) therefore suggested that it may be the lack of reading practice over such an extended amount of time that is the obstacle to closing the fluency gap for samples of older children with reading disabilities (e.g., 9-12 years and beyond).

Torgesen, J. K. (2006). Recent discoveries from research on remedial interventions for children with dyslexia. In M. Snowling & C. Hulme (Eds.*), The science of reading: A handbook*. Oxford: Blackwell Pulishers.

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Barnyak, N.C., & Paquette, K.R. (2010). An investigation of elementary preservice teachers' reading instructional beliefs. *Reading Improvement, 47*(1), 7-17.

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Self-regulated learning (SRL) is often portrayed as an active, dynamic process in which self-motivated learners set their learning goals, employ effective learning strategies, monitor their learning progress, evaluate their progress against some self-set standards and use this information to regulate their study (Metcalfe, 2009; Pintrich, 2000; Thiede & Dunlosky, 1999; Winne & Hadwin, 1998; Zimmerman, 1998). However, research has shown that **most people are far from being effective self-regulated learners**. One of the reasons is that self-monitoring of learning is usually inaccurate (Karpicke, Butler, & Roediger, 2009; Koriat & Bjork, 2005). This is true whether the learning materials are word pairs (Nelson & Dunlosky, 1991), passages of text (Glenberg & Epstein, 1985), or school subject materials (Hacker, Bol, Horgan, & Rakow, 2000; Kostons, van Gog, & Paas, 2010) and whether the learning context is the laboratory (Dunlosky & Lipko, 2007; Maki, 1998), the classroom (Hacker et al., 2000), or computer-based learning environments (Kostons et al., 2010). Inaccurate monitoring is detrimental to SRL because initiation of self-regulatory processes, such as redefinition of a learning task, adjustment of task goals and standards, and changes in study strategies, is contingent on the outcomes of monitoring and evaluation of learning (Winne & Hadwin, 1998) (p.78).

Shiu, L., & Chen, Q. (2013). Self and external monitoring of reading comprehension. *Journal of Educational Psychology, 105*(1), 78-88.

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According to Kim, Wagner, and Foster (2011), the correlation between reading comprehension and fluency is high (ranging from .73 to .76 for first graders and from .67 to .70 for third graders); reading comprehension is, therefore, interconnected with fluency but is also a distinct aspect of reading competence.

Kim, Y.-S., Wagner, R. K., & Foster, E. (2011). Relations among oral reading fluency, silent reading fluency, and reading comprehension: A latent variable study of first-grade readers. *Scientific Studies of Reading, 15,* 338–362.

When children start to learn to read English, they benefit from learning grapheme–phoneme correspondences. As they become more skilled, they use larger graphophonic units and morphemes in word recognition and spelling. We hypothesized that these 2 types of units in decoding make independent contributions to children's reading comprehension and fluency and that the use of morphological units is the stronger predictor of both measures. In a longitudinal study with a large sample in the United Kingdom, we tested through multiple regressions the contributions that these different units make to the prediction of reading competence (reading comprehension and fluency). The predictors were measured when the children were aged 8–9 years. Reading comprehension and rate were measured concurrently, and reading list fluency was measured at 12 and 13 years. After controlling for age and verbal IQ, the children's use of larger graphophonic units and their use of morphemes in reading and spelling made independent contributions to predicting their reading comprehension and reading fluency. The use of morphemes was the stronger predictor in all analyses. Thus, teaching that promotes the development of these different ways of reading and spelling words should be included in policy and practice (p.959). Nunes, T., Bryant, P., & Barros, R. (2012). The development of word recognition and its significance for comprehension and fluency. *Journal of Educational Psychology, 104*(4), 959-973.

Essentially, these matrices classified children into one of four categories, as illustrated in the Appendix: (a) not meeting the benchmark and being at risk on the first-grade literacy outcome (true positive); (b) not meeting the benchmark but not being at risk on the first-grade literacy outcome (false positive); (c) meeting the benchmark and being at risk on the first-grade literacy outcome (false negative); or (d) meeting the benchmark and not being at risk on the first-grade literacy outcome (true negative). Using the formulas presented in the Appendix, these matrices were used to generate several diagnostic efficiency indices: sensitivity, specificity, positive predictive power, and negative predictive power. These indices represent those typically used to describe classification accuracy (Streiner, 2003). In the present study, sensitivity represented the proportion of children who did not meet the preschool benchmark out of all children who were at risk on first-grade literacy outcomes. Specificity represented the proportion of children who met the benchmark out of all children who were not at risk on first-grade literacy outcomes. Positive predictive power indicated that the proportion of children who were at risk on first-grade literacy outcomes out of all children who did not meet the preschool benchmark. Negative predictive power indicated the proportion of children who were not at risk on first-grade literacy outcomes out of all children who met the preschool benchmark (i.e., true negatives). In addition to these indices, a phi coefficient was computed to provide a classification agreement index that corrected for chance (p.949-950). … Our data support optimal benchmarks of **18 uppercase letters and 15 lowercase letters** when considering all three literacy outcomes. These optimal benchmarks continued to have high negative predictive power, as described earlier, but also maximized classification accuracy in balancing negative predictive power with sensitivity, specificity, and positive predictive power. Use of these optimal benchmarks thus affords the most confidence that children who meet the benchmarks will continue to succeed in literacy tasks and that children who do not meet the benchmarks are those most likely to continue to struggle with literacy learning. Ensuring such accuracy is not a trivial matter (p.953). Piasta, S. B., Petscher, Y., & Justice, L. M. (2012). How many letters should preschoolers in public programs know? The diagnostic efficiency of various preschool letter-naming benchmarks for predicting first-grade literacy achievement. *Journal of Educational Psychology, 104*(4), 945-958.

The most commonly reported measure quantifying the correspondence between teachers' judgments and students' actual achievement is the correlation between the two. Overall, moderate to high correlations are reported (Begeny et al., 2008; Demaray & Elliot, 1998; Feinberg & Shapiro, 2003). For example, Feinberg and Shapiro (2009) reported correlations of .59 and .60 between teachers' judgments and students' decoding skills and reading comprehension, as measured by subtests of the Woodcock- Johnson–III Test of Achievement. In the same study, a correlation of .64 was found between students' oral reading fluency as measured by a CBM procedure and teachers' predictions of oral reading fluency. In a review of 16 studies, Hoge and Coladarci (1989) found a median correlation of .66 between teachers' judgments and students' achievement on a standardized test. On the one hand, these results may be interpreted as indicating that

teachers' judgments are quite accurate; on the other hand, their judgments are evidently far from perfect, and more than two thirds of the variance in teachers' judgments cannot be explained by student performance. Additionally, the correlations found ranged substantially across studies, from .28 to .92 (Hoge & Coladarci, 1989) (p.744).

Südkamp, A., Kaiser, J., & Möller, J. (2012). Accuracy of teachers' judgments of students' academic achievement: A meta-analysis. *Journal of Educational Psychology, 104*(3), 743-762

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Teachers have various assessment tools at their disposal, including "oral questioning of students, observation, written work products, oral presentations, interviews, projects, portfolios, tests, and quizzes" (Shepard, Hammerness, Darling-Hammond, & Rust, 2005, p. 294).

Shepard, L., Hammerness, K., Darling-Hammond, L., & Rust, F. (2005). Assessment. In L. Darling-Hammond & J. Bransford (Eds.), *Preparing teachers for a changing world* (pp. 275–326). San Francisco, CA: Wiley.

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O'Connor, R. E.; Swanson, H.L., & Geraghty, C. 2010). Improvement in reading rate under independent and difficult text levels: Influences on word and comprehension skills. *Journal of Educational Psychology, 102*(1), 1-19.

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There is robust evidence for a phenotypic relationship between mathematics and reading, with studies reporting moderate to high correlations (approx. .24 –.62; e.g., Durand, Hulme, Larking, & Snowling, 2005; Hart, Petrill, Thompson, & Plomin, 2009; Hecht, Torgesen, Wagner, & Rashotte, 2001). In most cases, these studies have focused on word decoding or global measures of reading, in conjunction with global measures of mathematics or arithmetic. Similarly, there is substantial comorbidity between difficulty in word reading and difficulty in mathematics (e.g., Dirks, Spyer, van Lieshout, & de Sonneville, 2008; Landerl & Moll, 2010). The overlap between reading and mathematics has typically been attributed to language and working memory processes that are required for both, such as phonological processing skills (e.g., De Smedt, Taylor, Archibald, & Ansari, 2010; Hecht et al., 2001) (p.623). … our results lead to the prediction that children with reading difficulties are at elevated risk for co-occurring difficulties in mathematics, and this risk is highest for children with deficits in reading comprehension (p.632).

Harlaar, N., Kovas, Y., Dale, P. S., Petrill, S. A., & Plomin, R. (2012). Mathematics is differentially related to reading comprehension and word decoding: Evidence from a genetically sensitive design. *Journal of Educational Psychology, 104*(3), 622-635.

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The initial improvement retained students make, relative to their younger grade mates, is likely a powerful motivator for educators. Teachers of the retained students observe their success in the repeat-year classroom but may not have the opportunity to observe these students' performance 2 to 5 years later. If teachers were made aware that the immediate boost retained children experience dissipates over the following 3 or 4 years, they might be less likely to recommend this intervention. In essence, by the end of elementary school, children retained and children promoted in first grade do not differ in their levels of achievement in math or reading, but there is an additional cost of one year of additional schooling for the retained children (p.618).

Moser, S. E., West, S. G., & Hughes, J. N. (2012). Trajectories of math and reading achievement in low-achieving children in elementary school: Effects of early and later retention in grade. *Journal of Educational Psychology, 104*(3), 603-621.

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The present study included a comprehensive model of cognitive skills that contribute to successful reading comprehension, and overall, our findings revealed that children's comprehension is not identical across all types of text and questions. In particular, we found that **higher level cognitive skills such as inferencing and reasoning contributed to expository texts and more complex question types, while word recognition and oral language contributed to all types of texts and questions**. … our findings indicate that interactions between reader characteristics such as different cognitive skills and specific text and question categories exist. Such findings support a more multidimensional scale of text complexity (Graesser et al., 2011). (p.524).

Eason, S. H., Goldberg, L. F., Young, K. M., Geist, M. C., & Cutting, L. E. (2012). Reader–text interactions: How differential text and question types influence cognitive skills needed for reading comprehension. *Journal of Educational Psychology, 104*(3), 515-528.

Mild perinatal adversities, such as being small for gestational age or being born late preterm, are usually considered to be risk factors for subsequent child development, including cognitive development (Chyi, Lee, Hintz, Gould, & Sutcliffe, 2008; Nomura et al., 2009; Van Baar, Vermaas, Knots, de Kleine, & Soons, 2009). Here we present experimental data supporting a radically different view, derived from the theory of differential susceptibility (Belsky, Bakermans-Kranenburg, & van IJzendoorn, 2007; Boyce & Ellis, 2005; Ellis, Boyce, Belsky, Bakermans-Kranenburg, & Van IJzendoorn, 2011). We suggest that mild (but not severe) perinatal adversities may program children to be more susceptible than other children to the environment, for better *and* for worse. Children who are small for gestational age or born late preterm may acquire the **poorest early literacy skills in unfavorable environments**, but they might perform at the highest literacy level if delays in early literacy development are addressed at an early stage. Children may profit more from beginning reading instruction when they receive an early literacy intervention in kindergarten that prompts them to **pay attention to print** as an object of exploration, an important precursor of the beneficial effects of reading instruction (Byrne, Fielding-Barnsley, & Ashley, 2000; Duursma, Augustyn, & Zuckerman, 2008; Silva & Alves Martins, 2002; Snider, 1997; Van der Kooy-Hofland, Bus, & Roskos, 2011; Van der Kooy-Hofland, Kegel, & Bus, 2011).

van der Kooy-Hofland, V. A. C., van der Kooy, J., Bus, A. G., van IJzendoorn, M. H., & Bonsel, G. J. (2012, February 6). Differential Susceptibility to early literacy intervention in children with mild perinatal adversities: Short- and long-term effects of a randomized control trial. *Journal of Educational Psychology*, *104*(2), 337-349.

This suggests that the mirror writings may occur (depending on the context) between some other incorrect writings (or absence of writing) and correct writings in the development of **almost all** children. In addition, contextual or situational factors, such as the preceding writing or the position of the writing on the page, had a much stronger influence on mirror writing than individual factors, such as writing hand or gender (p.193).

Fischer, J-P., & Tazouti, Y. (2012). Unraveling the mystery of mirror writing in typically developing children. *Journal of Educational Psychology, 104*(1), 193–205.

Some children demonstrate adequate or better reading achievement in early school grades but fall significantly behind their peers in later grades. These children are often referred to as late-emerging poor readers. In this study, we investigated the prevalence and heterogeneity of these poor readers. We also examined the early language and nonverbal cognitive abilities of late-emerging poor readers. Participants were 493 children who were a subsample from an epidemiological study of language impairments in school-age children. In kindergarten, children were administered a battery of language, early literacy, and nonverbal cognitive measures. Word reading and reading comprehension achievement was assessed in 2nd, 4th, 8th, and tenth grades. Latent transition analysis was used to model changes in reading classification (good vs. poor reader) across grades. **Population estimates revealed that 13.4% of children could be classified as late-emerging poor readers. These children could be divided into those with problems in comprehension alone (52%), word reading alone (36%), or both (12%).** Further results indicated that late-emerging poor readers often had a history of **language and/or nonverbal cognitive impairments in kindergarten**. Subtypes of poor readers also differed significantly in their profiles of language, early literacy, and nonverbal cognitive abilities in kindergarten. Results are discussed in terms of causal factors and implications for early identification (p.166).

Catts, H.W., Compton, D., Tomblin, J.B. & Sittner Bridges, M. (2012). Prevalence and nature of late-emerging poor readers. *Journal of Educational Psychology, 104*(1), 166–181.

The trustworthiness of "at risk" and "low risk" instructional recommendations on the basis of oral reading rates was high. We discuss these findings in light of the existing research on reading fluency. Our findings have implications for research and instruction for fluency and literacy development of both fluent and nonfluent readers.

Wang, C., Algozzine, B., Ma, W., & Porfeli, E. (2011, March 28). Oral reading rates of second-grade students. *Journal of Educational Psychology, 103*(2), 442-454

Overall, results suggest that some young children do have the ability to make orthographic analogies when given multiple exemplars but that most improvement in target word reading reflects purely phonological activation. Practical steps for identifying genuine analogy use in a subset of children are thus described (p. 190).

Savage, R.S., Deault, L., Daki, J., & Aouad, J. (2011).Orthographic analogies and early reading: Evidence from a multiple clue word paradigm. *Journal of Educational Psychology, 103*(1), 190–205.

Discovery learning approaches to education have recently come under scrutiny (Tobias & Duffy, 2009), with many studies indicating limitations to discovery learning practices. Therefore, 2 meta-analyses were conducted using a sample of 164 studies: The 1st examined the effects of unassisted discovery learning versus explicit instruction, and the 2nd examined the effects of enhanced and/or assisted discovery versus other types of instruction (e.g., explicit, unassisted discovery). Random effects analyses of 580 comparisons revealed that outcomes were favorable for explicit instruction when compared with unassisted discovery under most conditions (d _ –0.38, 95% CI [–.44, _.31]). In contrast, analyses of 360 comparisons revealed that outcomes were favorable for enhanced discovery when compared with other forms of instruction (d _ 0.30, 95% CI [.23, .36]). The findings suggest that unassisted discovery does not benefit learners, whereas feedback, worked examples, scaffolding, and elicited explanations do p..

Alfieri, L., Brooks, P. J., Aldrich, N. J., & Tenenbaum, H. R. (2010). Does discovery-based instruction enhance learning? *Journal of Educational Psychology*, 103(1), 1-18.

The purposes of this study were (a) to identify measures that when added to a base 1st-grade screening battery help eliminate false positives and (b) to investigate gains in efficiency associated with a 2-stage gated screening procedure. We tested 355 children in the fall of 1st grade and assessed for reading difficulty at the end of 2nd grade. The base screening model included measures of phonemic awareness, rapid naming skill, oral vocabulary, and initial word identification fluency (WIF). Short-term WIF progress monitoring (intercept and slope), dynamic assessment, running records, and oral reading fluency were each considered as an additional screening measure in contrasting models. Results indicated that the addition of WIF progress monitoring and dynamic assessment, but not running records or oral reading fluency, significantly decreased false positives. The 2-stage gated screening process using phonemic decoding efficiency in the 1st stage significantly reduced the number of children requiring the full screening battery (p.327).

Selecting At-Risk First-Grade Readers for Early Intervention: Eliminating False Positives and Exploring the Promise of a Two-Stage Gated Screening Process
Donald L. Compton, Douglas Fuchs, Lynn S. Fuchs, Bobette Bouton, Jennifer K. Gilbert,
Laura A. Barquero, Eunsoo Cho, and Robert C. Crouch Journal of Educational Psychology 2010, Vol. 102, No. 2, 327–340

Among the 1st-grade predictors, individual differences in growth rate in oral reading fluency in 1st grade, followed by vocabulary skills and the autoregressive effect of reading comprehension, made the most contribution to reading comprehension in 3rd grade. Among the 2nd- and 3rd-grade predictors, children's initial status in oral reading fluency had the strongest relationships with their reading comprehension skills in 3rd grade.

Young-Suk, K., Petscher, Y., Schatschneider, C., & Foorman, B. (2010). Does growth rate in oral reading fluency matter in predicting reading comprehension achievement? *Journal of Educational Psychology, 102*(3), 652–667.

O'Connor, R.E., Swanson, H.L, & Geraghty, C. (2010). Improvement in reading rate under independent and difficult text levels: Influences on word and comprehension skills. *Journal of Educational Psychology, 102*(1), 1-19.

The special case of English: A perfect storm?

Note that the processes I have been outlining would in principle apply to any alphabetic writing system – they all code phonemes, and they are all morphological as well as phonological. But I propose that English creates special problems. The apparently unruly nature of the orthography, the existence of many words that do not follow straightforward one-to-one mapping of letter onto phoneme, may undermine the resolve of teachers to teach reading as if it were an exercise in alphabetic decoding. And teachers may not have such a resolve in the first place. We know that some do not because they have been trained to avoid explicit instruction in the alphabetic principle (Goodman, 1986; Shankweiler & Fowler, 2004). This in turn has been in part based on the conviction that reading cannot be done this way anyway, precisely because of the existence of irregular words like *the, once, one, was, were, there* … .So, we may have the beginnings of a perfect storm – children *ill* equipped to discover, all by themselves, the alphabetic nature of English writing, the same children well equipped, all by themselves, to discover its morphemic nature, and a teacher who advertently or inadvertently fosters the morphemic hypothesis and obscures the phonemic one, leading to children trapped in an initially successful strategy but one that will eventually leave them floundering (Byrne, Freebody, & Gates, 1992) (Byrne, 2011, p. 182).

Byrne, B. (2011). Evaluating the role of phonological factors in early literacy development. In S. Brady, D. Braze, & C.A. Fowler (Eds.), *Explaining individual differences in reading: Theory and evidence.* New York: Psychology Press.

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"Research shows that about 40% of children learn to read fairly easily with any instructional approach. For another 30-40% of children, learning to read requires more effort. For the remaining 20-30%, reading may be one of the most difficult tasks they will have to master in their school years."

Lyon, G.R. (April 1998). Overview of NICHD reading and literacy initiatives. U.S. Senate Committee on Labor and Human Resources, United States Congress. Washington, D.C. Congressional Printing Office.

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Likewise, the data suggest that formation of memories through neural consolidation works best if students have a number of short learning sessions separated over time, not single long sessions. Again, the advantages of spaced or distributed practice over massed practice have also been known for many decades (see Olson & Hergenhahn, 2009; Ebbinghaus, 1913). Neuroscience, in this case, reinforced these best practices by providing the data at the neural level that supported these methods" p.50).

Alferink, L.A., & Farmer-Dougan, V. (2010): Brain-(not) based education: Dangers of misunderstanding and misapplication of neuroscience research, *Exceptionality, 18*(1), 42-52.

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Genetic studies, too, provide support for the notion that accuracy- improved and persistently poor readers may represent different etiologies. Twin studies report that subjects with relatively higher IQs, as is true of accuracy-improved readers or those with dyslexia, tend to have stronger genetic influence, whereas shared environment is a stronger influence for those with lower IQs, comparable to that found in persistently poor readers or those with general reading backwardness. Here, the investigators postulate that ''poor home and educational environment could be jointly responsible for the concurrent expression of low IQ'' and poor reading (Olson, 1999, p.13). In contrast, in accuracy-improved readers or those with dyslexia, reading difficulties are more likely to be unexpected and to reflect stronger genetic influences … persistently poor readers read real words using memory systems, suggesting brain systems for analyzing and reading words have not developed. (Shaywitz, Mody, & Shaywitz, p.280).

Shaywitz, S.E., Mody, M. & Shaywitz, B.A. (2006). Neural mechanisms in dyslexia. *Current Directions in Psychological Science, 15*(6), 278-281.

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A study of 30,000 Florida students in Grades 1-3 found that those using SRA/McGraw-Hill's Reading Mastery earned the highest scores. "Examining the core: Relations among reading curricula, poverty, and first through third grade reading achievement," was published in the Journal of School Psychology, Issue 47, by a team of researchers at the Florida Center for Reading Research. The study compared the effects of six core reading curricula on oral reading fluency growth, while appraising whether these effects differ by grade level and for children living in lower socioeconomic (SES) households. Success was measured by oral reading fluency (ORF), which correlates positively with standardized measures of reading achievement. ORF is often touted as the best overall indicator of reading proficiency for students in the early stages of learning to read. Overall, students in the Reading Mastery curriculum demonstrated

generally greater overall ORF growth than students in other curricula. Also, they more frequently met or exceeded benchmarks for adequate achievement in Grades 1-3.

Crow, E.C., Connor, C.M., & Petscher, Y. (2009). Examining the core: Relations among reading curricula, poverty, and first through third grade reading achievement. *Journal of School Psychology, 47*(3), 187–214.

Unfortunately, very little rigorous evaluation of programs and cost-effectiveness analysis is done within the Australian school system. Decisions are made without the best possible understanding of what works in different contexts, or — critically — which programs achieve results at the lowest cost. (sub. 30, p. 8)

Productivity Commission. (2012). *Schools Workforce*. Research Report, Canberra. JEL code: I21, I28, J24. Retrieved from http://www.pc.gov.au/projects/study/education-workforce/schools/report

In the literature, highly standardized interventions and those with less standardization (i.e., more responsive to individual student needs) were not associated with differential impact (p.164).

After third grade, the emphasis on instruction in learning to read often begins to fade from instruction in the general education classroom, meaning students who do not read proficiently by the end of Grade 3 may face serious consequences in their academic achievement (p.164-5).

Spelling and writing are incorporated in some reading interventions because the skills associated with successful reading—such as phonological knowledge, text structure knowledge, and reasoning—also play a role in spelling and writing (Abbott & Berninger, 1993; Graham, Harris, & Chorzempa, 2002; Wanzek et al., 2006) (p.166).

Both Edmonds et al. (2009) and Scammacca et al. (2007) noted smaller mean effects when considering only norm-referenced outcome measures (p.166).

Following a pattern of findings in which studies that are more rigorous yield smaller effects than those that are less rigorous (Swanson, Hoskyn, & Lee, 1999), the small effects noted for extensive interventions were notably lower than effects reported in previous syntheses of reading interventions for adolescents (p.186).

Although instructional group size is often noted as an important intervention variable for early elementary students (Elbaum et al., 2000; Vaughn et al., 2003; Wanzek & Vaughn, 2007), this synthesis did not find support for instructional group size as a significant moderator of effects for students in Grades 4 through 12, despite the variety of group sizes noted in the corpus of studies. This finding aligns with an experimental study that directly compared large- (10–15 students) and small-group (3–5 students) extensive intervention at the sixth-grade level, reporting no differences in student outcomes based on group size (Vaughn, Wanzek, et al., 2010). There are several possible interpretations of this finding. First, perhaps group size needs to be reduced further to yield effects. Second, teachers in these studies may not have adequately differentiated instruction, so that adjustments in group size are associated with differential outcomes. Third, for students struggling with reading after Grade 3, receiving the same instruction in a smaller group size may not be sufficient for improving student outcomes. … For secondary students with significant reading difficulties, very intense and sustained interventions may be required to maintain reading growth each year of school (p.187-8).

Wanzek, J., Vaughn, S., Scammacca, N.K., Metz, K., Murray, C.S., Roberts, G., & Danielson, L. (2013). Extensive reading interventions for students with reading difficulties after Grade 3. *Review of Educational Research, 83*(2), 163-195.

This review synthesizes research on English reading outcomes of all types of programs for Spanish-dominant English language learners (ELLs) in elementary schools. … the largest and longest term evaluations, including the only multiyear randomized evaluation of transitional bilingual education, did not find any differences in outcomes by the end of elementary school for children who were either taught in Spanish and transitioned to English or taught only in English. The review also identified whole-school and whole-class interventions with good evidence of effectiveness for ELLs, including Success for All,

cooperative learning, Direct Instruction, and ELLA. Programs that use phonetic small group or one-to-one tutoring have also shown positive effects for struggling ELL readers. What is in common across the most promising interventions is their use of extensive professional development, coaching, and cooperative learning. The findings support a conclusion increasingly being made by researchers and policymakers concerned with optimal outcomes for ELLs and other language minority students: Quality of instruction is more important than language of instruction.

Cheung, A.C.K., & Slavin, R.E. (2012). Learners (ELLs) in the elementary grades: A synthesis of research effective reading programs for Spanish-dominant English language. *Review of Educational Research, 82*(4), 351-395.

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Several national reports have suggested the usefulness of systematic, explicit, synthetic phonics instruction based on English word structure along with wide reading of quality literature for supporting development in early reading instruction. Other studies have indicated, however, that many in-service teachers are not knowledgeable in the basic concepts of the English language. They may be well versed in children's literature but not know how to address the basic building blocks of language and reading. The authors hypothesized that one of the reasons for this situation is that many instructors responsible for training future elementary teachers are not familiar with the concepts of the linguistic features of English language. This hypothesis was tested by administering a survey of language concepts to 78 instructors. The results showed that even though teacher educators were familiar with syllabic knowledge, they performed poorly on concepts relating to morphemes and phonemes. In a second study, 40 instructors were interviewed about best practices in teaching components and subskills of reading. Eighty percent of instructors defined phonological awareness as letter-sound correspondence. They also did not mention synthetic phonics as a desirable method to use for beginning reading instruction, particularly for students at risk for reading difficulties. In conclusion, providing professional development experiences related to language concepts to instructors could provide them the necessary knowledge of language concepts related to early literacy instruction, which they could then integrate into their preservice reading courses.

Malatesha Joshi, R., Binks, E., Hougen, M., Dahlgren, M. E., Ocker-Dean, E., & Smith, D. L. (2009). Why elementary teachers might be inadequately prepared to teach reading. *Journal of Learning Disabilities, 42*(5), 392-402. doi:http://dx.doi.org/10.1177/0022219409338736

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Aaron, Joshi, Boulware- Gooden, and Bentum (2008) demonstrated that when the weak component was identified first and then appropriate intervention was provided, there was a significant improvement in that skill, which led to overall higher reading achievement. **This study also demonstrated that identification of LD based on the discrepancy model is not necessary and can be dispensed with.** Furthermore, SVR accounts for approximately 40% to 80% of the variance in reading comprehension between Grades 2 through 10 (Catts et al., 2006; Hoover & Gough, 1990; Johnston & Kirby, 2006; Joshi & Aaron, 2000; Savage, 2006) (p.388) Aaron and colleagues (Aaron, Joshi, Boulware-Gooden, et al., 2008; Aaron, Joshi, & Quatroche, 2008) extended SVR and proposed the "componential model of reading" (CMR), according to which reading performance is influenced by several factors that can be classified into three domains— cognitive, psychological, and ecological. Each domain has its own components. For instance, the cognitive domain has two components: word recognition and comprehension; components of the psychological domain include factors such as motivation and interest, teacher expectation, and gender differences; and the ecological domain includes components such as teacher knowledge, dialect differences, home environment, and English as a second language (p.388)

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Because of the Flynn effect, IQ scores rise as a test norm ages but drop on the introduction of a newly revised test norm. The purpose of the current study was to determine the impact of the Flynn effect on learning disability (LD) diagnoses, the most prevalent special education diagnosis in the United States. Using a longitudinal sample of 875 school children who were initially diagnosed with LD on the *Wechsler Intelligence Scale for Children–Revised* (WISC-R), children experienced a significant decline in IQ when retested on the third edition of the WISC (WISC-III) compared to peers who were tested on the WISC-R twice. Furthermore, results from logistic regression analyses revealed that the probability of a rediagnosis

of LD on reevaluation significantly decreased, in part, because of this decline on the WISC-III. DOI: 10.1177/0022219410392044 *J Learn Disabil* 2012 45: 319 originally published online 30 December 2010

Tomoe Kanaya and Stephen Ceci The Impact of the Flynn Effect on LD Diagnoses in Special Education

"Our long-term goal is to develop efficient batteries to identify children who are in immediate need of Tier 3 intervention such that the costs of administering and interpreting the assessments are far exceeded by the costs and the potential negative psychological and educational outcomes resulting from administering Tier 2 instruction that is ineffective for children unable to benefit from that level of intensity or intervention approach. With these caveats in mind, results of the logistic regression models indicated that Tier 2 response data may not be necessary to predict accurately a group of children who are at considerable risk of being unresponsive at Tier 2. This suggests that at-risk children can be identified accurately for Tier 3 intervention without participating in (and failing to respond to) Tier 2 intervention. Model 3, which included universal screening data, Tier 1 response data (PM WIF data as well as instruction teacher ratings of student behavior and attention during regular classroom instruction), and a battery of norm-referenced tests, distinguished nonresponders to Tier 2 with sensitivity of 90% and specificity of 80%" (p.212-13). Compton, D.L., Gilbert, J.K., Jenkins, J.R., Fuchs, D., Fuchs, L.S., & Eunsoo Cho, L.A. (2012). Ensure selection accuracy? Accelerating chronically unresponsive children to Tier 3 instruction: What level of data is necessary to ensure selection accuracy? *Journal of Learning Disabilities, 45*, 204-216.

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"Australia does not perform as well as comparable countries in giving students equal opportunity to realise their educational potential, irrespective of their background or ability. The resulting educational disadvantage is particularly evident among Australian students who are Indigenous, from low socioeconomic backgrounds, have a disability or other special needs, or reside in a rural or remote area". Productivity Commission Research Report, Schools Workforce, April 2012, p. 54.

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"According to the National Assessment of Educational Progress, the percentage of students who are proficient in basic reading and math are roughly half of the rates reported by the states (p.5)".
Stone, J.E. (2013). Reversing American decline by reducing education's casualties: First, we need to recapture our school boards. Education Consumers Foundation. Retrieved from http://www.education-consumers.org/rad.htm

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"Children who have not mastered reading by 3rd grade are the poor readers seen in the 8th grade and the students who struggle with science, technology, engineering, and math (STEM) skills. They become the discouraged learners, the behavior problems, the drop-outs, and the high school graduates who need remedial instruction in college. Essentially, their lack of early reading mastery predicts failure in school, college, and eventually in the workplace" (p.3).
Stone, J.E. (2013). Reversing American decline by reducing education's casualties: First, we need to recapture our school boards. Education Consumers Foundation. Retrieved from http://www.education-consumers.org/rad.htm

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"In addition to the evidence from successful schools, there are teaching methodologies that have been carefully researched and shown to be effective in bringing disadvantaged students to grade level by the 3rd grade. Although often used with special education students, they are demonstrably effective in preventing almost all reading failure when implemented in kindergarten as part of the general education curriculum. *Direct Instruction*, a program originally developed and tested in the 1960s and 70s, and *Success for All*, developed in the late 1980s, are two well known examples" (p.7).
Stone, J.E. (2013). Reversing American decline by reducing education's casualties: First, we need to recapture our school boards. Education Consumers Foundation. Retrieved from http://www.education-consumers.org/rad.htm

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**The importance of learning math facts**
Students with higher and lower math scores use different parts of the brain when doing simple calculations, according to a new study in *The Journal of Neuroscience*. High achievers use an area of the brain associated with arithmetic fact retrieval, whereas students with lower scores use an area associated with

quantity-processing mechanisms. The suggestion is that the ability to recall math facts (rather than do the sum from scratch) helps the students to go onto more complex mathematics.

The researchers used an fMRI scanner to examine the brains of 33 students (aged 17-18) as they performed simple, single-digit arithmetic. There was a clear association between particular areas of the brain and the students' scores in the PSAT math test (taken at age 15-16). The results suggest a correlation between arithmetic fact retrieval and higher scores, but more research is needed to see whether there is also a causational link - for example, whether interventions where lower-scoring students learn math facts lead to changes in brain activity and/or higher math scores.

Gavin R. Price1, Michèle M. M. Mazzocco2,3, and Daniel Ansari1 (2013). Why Mental Arithmetic Counts: Brain Activation during Single Digit Arithmetic Predicts High School Math Scores. The Journal of Neuroscience, 17 April 2013, 33 (16)

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"The way we went down the road to whole language is really a story of stupidity".
Reid Lyon, G. (2005). *Children of the Code Interview*. Retrieved from
http://www.childrenofthecode.org/interviews/lyon.htm#WholeLanguage

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"In addition, results of instructional studies imply causal relationships between handwriting and other written language skills. Teaching automatic letter writing improved compositional fluency: Students wrote texts that were longer (Berninger, Abbott, Whitaker, Sylvester, & Nolen, 1995) and were completed in less time (Berninger, Vaughan, Abbott, Abbott, Brooks, Rogan, et al., 1997; Berninger, Rutberg, Abbott, Garcia, Anderson-Youngstrom, Brooks, et al., 2006; Graham, Harris, & Fink, 2000). Teaching handwriting has also shown transfer to improved word reading (e.g., Berninger, Dunn, Lin, & Shimada, 2004; Berninger et al., 1997, 2006; Dunn & Miller, 2009)" (p. 494).
Todd, L. R., Berninger, V.W., Stock, P., Altemeier, L., Trivedi, P., & Maravilla, K. R. (2011). Differences between good and poor child writers on fMRI contrasts for writing newly taught and highly practiced letter forms. *Reading and Writing, 24*(5), 493-516.

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"Curriculum-based measurement of oral reading (CBM-R) is frequently used to set student goals and monitor student progress. … The number of data points, quality of data, and method used to estimate growth all influenced the reliability and precision of estimated growth rates. Results indicated that progress monitoring outcomes are sufficient to guide educational decisions if (a) ordinary least-squares regression is used to derive trend lines estimates, (b) a very good progress monitoring data set is used, and (c) the data set comprises a minimum of 14 CBMs-R" (p.356).
Theodore, J. C., Zopluoglu, C., Jeffery, D. L., & Barbara, D. M. (2012). Curriculum-based measurement of oral reading: Quality of progress monitoring outcomes. Exceptional Children, 78(3), 356-373.

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"Our findings converge with recent research that end-of-year status may provide the most reliable information related to student response. Schatschneider and colleagues (Schatschneider et al., 2008) studied 23,000 first graders and reported their end-of-first-grade scores on oral reading fluency uniquely predicted end-of-firstgrade reading comprehension, beginning-ofsecond-grade oral reading fluency, and end-ofsecond-grade reading comprehension. In contrast, oral reading fluency growth did not provide independent contribution beyond end-of-year scores to the prediction of any outcomes at first or second grade". Otaiba, S. A., Folsom, J. S., Schatschneider, C., Wanzek, J., Greulich, L., Meadows, J., Zie, L., & Connor, C. M. (2011). Predicting first-grade reading performance from kindergarten response to Tier 1 instruction. *Exceptional Children, 77*(4), 453-470.

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"Remediation of reading difficulties in older students may require considerable intensity and differentiation of instruction. A significant problem is that intensive, small-group instruction provided by highly skilled teachers is an expensive and infrequently applied instructional practice within most educational settings (Vaughn, Levy, Coleman, & Bos, 2002; Vaughn, Moody, & Schumm, 1998). Therefore, it is perhaps not surprising that the few available studies of students who receive special education services show fair levels of growth and little evidence that interventions through special

education actually close the achievement gap (Bentum & Aaron, 2003; Foorman et al., 1997; Hanushek, Kain, & Rivkin, 1998; Torgesen et al., 2001) (p.74)".

Wanzek, J., Vaughn, S., Roberts, G., & Jack, M. F. (2011). Efficacy of a reading intervention for middle school students with learning disabilities. *Exceptional Children, 78*(1), 73-87.

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 "Despite advances in the science of teaching reading, there still exists a small percentage of students who fail to make the expected progress in reading-related skills, notwithstanding attempts at intervention. Even if these struggling readers learn to decode adequately, fluency remains a problem for many, and little is known about the effectiveness of fluency interventions for older students with severe reading deficits. This study used a randomized experimental design to test the efficacy of a fluency intervention program on the word-identification and reading-comprehension outcomes of 60 middle-school students with severe reading delays. Results showed that students in the experimental group made more progress on standardized tests of reading fluency than students in the control group. No gains were seen in reading comprehension" (p.76).

Spencer, S.A., & Manis, F.R. (2010). The effects of a fluency intervention program on the fluency and comprehension outcomes of middle-school students with severe reading deficits. *Learning Disabilities Research & Practice*, 25(2), 76–86.

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 "In another longitudinal study, Lipka, Lesaux, and Siegel (2006) examined reading and reading-related abilities of children with poor wordreading skills. From a sample of 1,100 children who had been followed from kindergarten through fourth grade, 22 children were identified with word-reading deficits in fourth grade. Seven of the poor readers had persistent problems across grades, eight had late-emerging deficits (after third grade), and seven had borderline deficits at other grades. Additional results indicated that those with late-emerging word-reading problems had phonological processing deficits, especially after second grade. Such deficits were evident on tests of phonological awareness, phonological decoding, and spelling. Lipka et al. suggested that these children may have been able to compensate for their phonological deficits in the early grades, but as words became more complex, they showed reading and spelling difficulties" (p.167).

Lipka, O., Lesaux, N., & Siegel, L. (2006). Retrospective analyses of the reading development of Grade 4 students with reading disabilities: Risk status and profiles over 5 years. *Journal of Learning Disabilities, 39,* 364–378.

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 Juel (1991) suggested that some children may rely heavily on memorization of words, appear to be successful in beginning word reading, but struggle when such memorization becomes inefficient in the later grades. See also Carnine  Juel, C. (1991). Beginning reading. In R. Barr, M. L. Kamil, P. B. Mosenthal, & P. D. Pearson (Eds.), *Handbook of reading research* (Vol. 2, pp. 759–788). New York, NY: Longman.

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"Retention has been studied for many years, and the research is reasonably clear. Children who repeat a grade do very poorly in reading and, ultimately, graduation rates compared similarly to their low-achieving age mates who were promoted. In comparison to their new grade mates, they show a short-term gain because they are older when they take the test, but this advantage wears off within a few years".

Slavin, R. (2013). Reading by third grade: Thinking beyond retention. *The Blog: Huffington Post* 29/1/2013. Retrieved from http://www.huffingtonpost.com/robert-e-slavin/reading-by-third-grade_b_2567959.html

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 In this longitudinal study, those third grade students who were struggling with their reading had four times the rate of early school leaving compared with average readers.

Lesnick, J., Goerge, R., Smithgall, C. & Gwynne, J. (2010). *Reading on grade level in third grade: How is it related to high school performance and college enrollment?* Chapin Hall; Consortium on Chicago School Research; The Annie E. Casey Foundation. Retrieved from http://www.aecf.org/KnowledgeCenter/Publications.aspx?pubguid={61221250-BC02-49C9-8BDA-D64C45B1C80C}

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 "Fifteen years of experience with problem solving and RTI and several small-scale evaluation studies have led me to some conclusions about RTI and alternative educational practices. First, people in schools

want to implement practices that are good for students, but teachers in general may not have the skills they need to deliver instruction that is differentiated beyond accommodations. Second, when teachers implement proven practices, students improve. Third, it is difficult to implement proven practices in school settings. Fourth, "the system" still reinforces teacher referrals. Fifth, a system that relies on teacher referral for special education identification can result in disproportionate representation. Sixth, special education identification rates may not reduce when RTI is implemented. Seventh, and of most concern to me, is that an interventions-based system of identification has not led to better individualized education program (IEP) outcomes for students identified as eligible for special education services" (p. 274-5).

Ikeda, M.K. (2012). Policy and practice considerations for Response to Intervention: Reflections and commentary. *Journal of Learning Disab*ilities, *45*(3), 274-277.

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"Compton et al. show that assessing a student's response to generally effective small-group tutoring may not be required to identify students as LD. Schools might use a multistage screening model productively for simultaneously identifying (a) students who require and will benefit from less-intensive, shorter-term supplemental tutoring and (b) those who will fail to respond to such intervention and instead should be moved immediately into the more intensive and longerterm intervention they require. In these and other ways, research continues to refine understanding about how to conceptualize and conduct screening to optimize RTI's effectiveness and reduce its costs" (p.196).  Fuchs, L.S., & Vaughn, S. (2012).Responsiveness-to-Intervention: A decade later. Journal of Learning Disabil*ities, 45*(3), 195-203.

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"A growing body of research demonstrates reciprocal relations between letter name and sound knowledge and suggests that instruction in letter names may facilitate letter sound learning for those letters whose names also include their sounds (e.g., the /b/ at the beginning of the letter name B or the /f/ at the end of the letter name F), with children using the information contained in the letter names to derive or cue corresponding sounds (e.g., Evans, Bell, Shaw, Moretti, & Page, 2006; Levin, Shatil-Carmon, & Asif-Rave, 2006; McBride-Chang, 1999; Share, 2004; Treiman, Tincoff, Rodriguez, Mouzaki, & Francis, 1998; Treiman, Weatherston, & Berch, 1994). Considerable evidence also suggests reciprocal relations between phonological skills and alphabet knowledge development (Burgess & Lonigan, 1998; Lonigan, Burgess, & Anthony, 2000; McBride-Chang, 1999; Wagner et al., 1994), including potential benefits of phonological training on alphabet skills (Ball & Blachman, 1991)" (p.9). Shayne, B. P., & Wagner, R. K. (2010). Developing early literacy skills: A meta-analysis of alphabet learning and instruction. *Reading Research Quarterly, 45*(1), 8-38. Retrieved from http://search.proquest.com/docview/212123502?accountid=13552

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"Traditionally, pupils are allowed a fixed amount of time to learn a particular task or unit. The result is variation in the achievement level attained, with the amount learned per unit of time taken as a measure of learning rate. Surprisingly few studies have been conducted to investigate the actual time it takes to learn or the amount learned as essential variables in school learning. Research that has been done emphasizes setting fixed achievement goals and then looking at the resulting variance in the amount of time needed to achieve these goals. Pupil variations in the time to achieve criterion level have ratios of 1:4 on a single programmed unit of an imaginary language (Carroll & Spearritt, 1967), 1:3.4 on a three-unit sequence of matrix mathematics (Block, 1970), and 1:7 on a seven-unit imaginary science course (Arlin, 1973). On the basis of these studies, Carroll (1970) estimated that the range of time to achieve criterion level in school learning is about 1:5. Anderson (1976) examined the stability of these individual differences on programmed matrix arithmetic material and concluded that learning time is alterable over successive units through effective tutoring strategies" (p.338).  Gettinger, M., & White, M. A. (1980). Evaluating curriculum fit with class ability. *Journal of Educational Psychology, 72*(3), 338-344. doi: http://dx.doi.org/10.1037/0022-0663.72.3.338

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"Only a very small percentage of the population (1%-2%) met criteria for specific learning disabilities. In addition to substantial psychometric issues underlying these methods, general application did not improve the efficiency of the decision model, may not be cost effective because of low base rates, and may result in many children receiving instruction that is not optimally matched to their specific needs" (p.3).

" … efforts to relate cognitive patterns of strengths and weaknesses (PSW) to identification or treatment have met with limited success, especially when the focus is on individual profiles. Kavale and Forness (1984) conducted a meta-analysis of 94 studies of the validity of the Wechsler Intelligence Scales for Children--Revised (Wechsler, 1974) subtest regroupings for differential diagnosis of SLD and found that "no recategorization profile, factor cluster, or pattern showed a significant difference between learning disabled and abnormal samples" (p. 136). Similarly, Kramer, Henning-Stout, Ullman, and Schellenberg (1987) reviewed studies of scatter analysis of Wechsler Intelligence Scales for Children--Revised subtests and concluded that these measures were "unrelated to diagnostic category, academic achievement, or specific remedial strategies" (p. 42). Research with the third edition of the Wechsler Intelligence Scales for Children (WISC-III; Wechsler, 1991) found that the subtest profiles of 579 students replicated across test-retest occasions at chance levels ($[Mdn.sub.K] = 0.02$; Watkins & Canivez, 2004)" (p.4).

Stuebing, K. K., Fletcher, J. M., Branum-Martin, L., & Francis, D. J. (March 2012). Evaluation of the technical adequacy of three methods for identifying specific learning disabilities based on cognitive discrepancies. *School Psychology Review*, *41*(1), 3-22. Retrieved from Academic OneFile via Gale: http://find.galegroup.com.ezproxy.lib.rmit.edu.au/gtx/start.do?userGroupName=rmit&prodId=AONE

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1) Knowledge is crucial to support cognitive processes. (e.g., Carnine & Carnine, 2004; Hasselbring, 1988; Willingham, 2006).

2) Children who grow up in disadvantaged circumstances have fewer opportunities to learn important background knowledge at home (Walker et al, 1994) and they come to school with less knowledge, which has an impact on their ability to learn new information at school (Grissmer et al 2010) and likely leads to a negative feedback cycle whereby they fall farther and farther behind (Stanovich, 1986). Willingham blog http://www.danielwillingham.com/daniel-willingham-science-and-education-blog.html Carnine, L., & Carnine, D. (2004). The interaction of reading skills and science content knowledge when teaching struggling secondary students. *Reading & Writing Quarterly*, *20*(2), 203-218.
Grissmer, D., Grimm, K. J., Aiyer, S. M., Murrah, W. M., & Steele, J. S. (2010). Fine motor skills and early comprehension of the world: Two new school readiness indicators. *Developmental psychology*, *46*(5), 1008.
Hasselbring, T. S. (1988). Developing Math Automaticity in Learning Handicapped Children: The Role of Computerized Drill and Practice. *Focus on Exceptional Children*, *20*(6), 1-7.
Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading research quarterly*, 360-407.
Willingham, D. T. (2006). How knowledge helps. *American Educator*, *30*(1), 30-37.

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"Moreover, there is strong evidence that increasing the general knowledge and vocabulary of a child before age six is the single highest correlate with later success". Hirsch, E.D. (2013). Primer on success: Character and knowledge make the difference. *Education Next, 13*(1). Retrieved from http://educationnext.org/primer-on-success/

"In summary, drill and practice through high-quality CAI, implemented with fidelity, can be considered a useful tool in developing students' automaticity, or fast, accurate, and effortless performance on computation, freeing working memory so that attention can be directed to the more complicated aspects of complex tasks" (6/142). Gersten, R., Ferrini-Mundy, J., Benbow, C., Clements, D., Loveless, T., Williams, V., Arispe, I., & Banfield, M. (2008). *Report of the task group on instructional practices (National Mathematics Advisory Panel)*. Retrieved from the U.S. Department of Education Web site:http://www.ed.gov/about/bdscomm/list/mathpanel/report/instructional-practices.pdf

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"Students who scored higher on NAEP vocabulary questions also scored higher in reading comprehension".
National Center for Education Statistics (2012). *The Nation's Report Card: Vocabulary Results From the 2009 and 2011 NAEP Reading Assessments* (NCES 2013–452). Institute of Education Sciences, U.S. Department of Education, Washington, D.C.

"In fact, one study reported that spell checkers usually catch just 30 to 80 percent of misspellings overall (partly because they miss errors like *here vs. hear*), and that spell checkers identified the target word from the misspellings of students with learning disabilities only 53 percent of the time."
Moats, L.C. (2005). How spelling supports reading. *American Educator,* Winter 2005/06, 12-43. Retrieved from http://www.readingrockets.org/article/8845/

**Abstract** Two studies from English-speaking samples investigated the methodologically difficult question of whether the later reading achievement of children learning to read earlier or later differs. Children (*n*=287) from predominantly state-funded schools were selected and they differed in whether the reading instruction age (RIA) was either five or seven years. Study 1 covered the first six years of school following three cohorts across a two-year design. Analyses accounted for receptive vocabulary, reported parental income and education, school-community affluence, classroom instruction, home literacy environment, reading self-concept, and age. The earlier RIA group had initially superior letter naming, non-word, word, and passage reading but this difference in reading skill disappeared by age 11. In Study 2, the decoding, fluency, and reading comprehension performance of 83 additional middle school-age children was compared. The two groups exhibited similar reading fluency, but the later RIA had generally greater reading comprehension. Given that the design was non-experimental, we urge further research to better understand developmental patterns and influences arising from different RIAs. Highlights ► Around age 10, children learning to read at seven had caught up to those learning at 5. ► Later starters had no long-term disadvantages in decoding and reading fluency. ► For whatever reason, the later starters had slightly better reading comprehension. ► Reading appears to be built on oral language, decoding, and reading skills. ► This research suggests some focus on teaching reading early could be relaxed. Suggatea, S.P., Schaughency, E.A., & Reeseb, E. (2013). Children learning to read later catch up to children reading earlier. *Early Childhood Research Quarterly, 28*(1), 33-48.

"Most theorists are agreed that the bulk of vocabulary growth during a child's lifetime occurs indirectly through language exposure rather than through direct teaching (Miller & Gildea, 1987; Nagy & Anderson, 1984; Nagy, Herman, & Anderson, 1985; Sternberg, 1985, 1987). Furthermore, many researchers are convinced that reading volume, rather than oral language, is the prime contributor to individual differences in children's vocabularies (Hayes, 1988; Hayes & Ahrens, 1988; Nagy & Anderson, 1984;Nagy & Herman, 1987; Stanovich, 1986)". Cunningham, A., & Stanovich, K. E. (1998). What reading does for the mind. *American Educator, 22*(1-2), 8-15. Retrieved from http://www.aft.org/pdfs/americaneducator/springsummer1998/cunningham.pdf

"Certainly our understanding of how neurons work, the role of neurotransmitters, and data showing correlations between brain activity and academic tasks has provided distinct clues into how a child learns. The problem, then, is not with the neuroscience data themselves, but how authors of these purported brain-based approaches appear to have erroneously filled in the missing research gaps. Thus, the problem is not with what neuroscientists and educators know, but with what they think they know. This 'filling-in-the-gaps' results from a variety of factors including misunderstanding of the research, misinterpretation or over interpretation of the data, and a belief in claims that are unsubstantiated or go beyond what the evidence supports." Alferink, L. A., &Farmer-Dougan, V. (2010). Brain-(not) based education: Dangers of misunderstanding and misapplication of neuroscience research. *Exceptionality, 18*, 42-52.

"It simply is not true that there are hundreds of ways to learn to read […] when it comes to reading we all have roughly the same brain that imposes the same constraints and the same learning sequence" (p. 218).

"We now know that the whole-language approach is inefficient; all children regardless of their socioeconomic backgrounds benefit from explicit and early teaching of the correspondences between letters and speech sounds. This is a well-established fact, corroborated by a great many classroom experiments. Furthermore, it is coherent with our present understanding of how the reader's brain works" (p. 326).
Dehaene, S. (2009). *Reading in the brain: The science and evolution of a human invention.* New York: Viking/Penguin.

Research proves students' socioeconomic background, while influential, is not the most important factor determining whether they succeed or fail. The Melbourne-based researcher Gary Marks has argued for some years that more important factors include student ability and motivation, school culture and classroom environment, and teacher quality and curriculum rigour. In a 2010 paper, Marks says "the relationship between socioeconomic background and student achievement is far from deterministic, with the most comprehensive measure explaining at most 33 per cent of the variation in student performance, but as (sometimes) little as 10 per cent to 12 per cent". An analysis of Australia's performance in international tests carried out by the Australian Council for Educational Research draws a similar conclusion when it argues that only "13 per cent of the explained variance in student performance in Australia was found to be attributable to students' socioeconomic background".

Donnelly, K. (2012). Defining education in terms of victimhood is unhelpful. *The Australian*, October 27,

In education, we continue to be seduced by the equivalent of snake-oil remedies, fake cancer cures, perpetual-motion contraptions, and old wives' tales. Myth and reality are not clearly differentiated, and we frequently prefer the former to the latter ....We have been innocents in education because we have not put our own house in order. We need to be much clearer about what we do and do not know so that we don't continually confuse the two. If I could have one wish for education, it would be the systematic ordering of our basic knowledge in such a way that what is known and true can be acted on, while what is superstition, fad, and myth can be recognized as such and used when there is nothing else to support us in our frustration and despair (p. 332). Bloom, B. S. (1972). Innocence in education. *School Review, 80*, 332-352.

"More typically, someone comes across an idea she or he likes and urges its adoption… often the changes proposed are both single and simple – more testing of students, loosening certification requirements for teachers, or a particular school improvement model…(p.740)". Levin, B. (2010). Governments and education reform: Some lessons from the last 50 years. *Journal of Education Policy, 25*(6), 739-747.

On May 18, 2012 Jeffrey Zients, Acting Director of the Office of Management and Budget (OMB), sent out a memo that could change history. In guidance to executive departments and agencies, the memo asks the entire Executive Branch to use every available means to promote the use of rigorous evidence in decision-making, program administration, and planning.

"Since taking office, the President has emphasized the need to use evidence and rigorous evaluation in budget, management, and policy decisions to make government work effectively. This need has only grown in the current fiscal environment. Where evidence is strong, we should act on it. Where evidence is suggestive, we should consider it. Where evidence is weak, we should build the knowledge to support better decisions in the future" (p.1).
Zient, J.D. (2012).Use of evidence and evaluation in the 2014 Budget: Memorandum to the heads of executive departments and agencies. Executive Office of the President, Office of Management and Budget. Retrieved from http://www.whitehouse.gov/sites/default/files/omb/memoranda/2012/m-12-14.pdf

The US D.O.E. spends about $80 million annually in educational research; whereas, the Department of Health and Human Services provides about $33 billion for health research.
The Haan Foundation. (2012). The federal education research project. Retrieved from http://www.haan4kids.org/fed_proj/

"A large body of data supports the view that movement plays a crucial role in letter representation and suggests that handwriting contributes to the visual recognition of letters. … After training, we found stronger and longer lasting (several weeks) facilitation in recognizing the orientation of characters that had been written by hand compared to those typed. Functional magnetic resonance imaging recordings indicated that the response mode during learning is associated with distinct pathways during recognition of graphic shapes. Greater activity related to handwriting learning and normal letter identification was observed in several brain regions known to be involved in the execution, imagery, and observation of actions, in particular, the left Broca's area and bilateral inferior parietal lobules. Taken together, these

results provide strong arguments in favour of the view that the specific movements memorized when learning how to write participate in the visual recognition of graphic shapes and letters" (p.67). Longcamp, M., Zerbato-Poudou, M. T., & Velay, J. L. (2005). The influence of writing practice on letter recognition in preschool children: A comparison between handwriting and typing. *Acta Psychologica, 119*, 67-79.

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"If procedures applied during processing are on automatic pilot, limited resources of working memory are freed for the cognitively draining self-regulation executive processes (Berninger et al., 1992; McCutchen, 1996)-which include managing attention, goal setting and planning, generating and applying strategies, monitoring, revising, and accessing and applying metaknowledge-and thinking processes (which include generating opinions in or about text, elaborating on others' ideas, considering multiple perspectives, synthesizing information, and constructing new ideas). … " … **the ability to read words correctly may facilitate the creation of precise, word-specific representations in long-term memory; these representations can be accessed during spelling and increase the probability of spelling words correctly** especially words with silent letters or alterations in phoneme-spelling relationships that must be learned for specific word contexts (see Berninger, Abbott, et al., 1998; Berninger, Vaughn, et al., 1998). Berninger, V.W., Abbott, R.D., Abbott, S.P., Graham, S., & Richards, T. (2002). Writing and reading: Connections between language by hand and language by eye. *Journal of Learning Disabilities, 35*, 39-56.

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What does it mean that most of our children are chronically improficient in the skill areas most critically important for success in school? David Boulton, Director, Children of the Code http://www.childrenofthecode.org/

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The number of US students diagnosed with a learning disability fallen over the last 10 years, especially among students aged 6 to 11. The development of Response-to-Intervention (RTI), in which struggling students receive early assistance in general education, played a role in reducing the need for a special education classification. Cortiella, C. (2011). *The state of learning disabilities.* New York: National Center for Learning Disabilities.

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Since 2006, DEECD has distributed more than $2.6 billion to schools through the PSD. … (DEECD) does not monitor how schools use the (Program for Students with Disabilities) funds nor does it adequately oversee the educational outcomes of students with special learning needs. Schools are not implementing DEECD's policies consistently or effectively. As a result, the quality and type of support provided to students with special learning needs is not equitable. … More broadly, DEECD does not know how many students in Victoria have unfunded special learning needs. It cannot identify these students, nor can it determine if they are being adequately supported by schools. Victorian Auditor-General (2012).Programs for students with special learning needs: Audit summary. Retrieved from http://www.audit.vic.gov.au/publications/20120829-Special-Learning-Need/20120829-Special-Learning-Need.rtf

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Programs for Students with Special Learning Needs
This audit assessed whether the Department of Education and Early Childhood Development has effectively supported students with special learning needs and maximised their educational outcomes. DEECD has developed policies and guidance to help schools to support students with special learning needs. However, it does not monitor how schools use the Program for Students with Disabilities funds nor does it adequately oversee the educational outcomes of these students.
Does the ILP clearly explain

| 6 | Who to speak to if the strategies aren't working | Yes 9% | No 91% |
|---|---|---|---|

http://www.audit.vic.gov.au/reports_and_publications/latest_reports/2012-13/20120829-special-learning-need.aspx

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A joint statement of the Committee on Children With Disabilities, American Academy of Pediatrics, American Association for Pediatric Ophthalmology and Strabismus, and the American Academy of Pediatric Ophthalmology and Strabismus:

'No scientific evidence supports claims that the academic abilities of children with learning disabilities can be improved with treatments that are based on 1) visual training, including muscle exercises, ocular pursuit, tracking exercises, or 'training' glasses; 2) neurological organisational training (laterality training, crawling, balance board, perceptual training); or 3) coloured lenses'.

Committee on Children With Disabilities, American Academy of Pediatrics, American Academy of Ophthalmology, American Association for Pediatric Ophthalmology and Strabismus (1998). Learning disabilities, dyslexia, and vision: A subject review. *Pediatrics, 102*, 1217–9.

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"Overall, the group taught by synthetic phonics had better word reading, spelling, and reading comprehension. There was no evidence that the synthetic phonics approach, which early on teaches children to blend letter sounds in order to read unfamiliar words, led to any impairment in the reading of irregular words (p. 1365).

"It was found in Study 1 that, after 6 years at school, children taught by the synthetic phonics approach read words, spelt words and had reading comprehension skills significantly in advance of those taught by the analytic phonics method. This shows that despite English being an opaque orthography, children are not impaired when taught by an approach to reading that is common in transparent orthographies"(p.1378).

"The analytic phonics approach, having an early sight word element and late teaching of sounding and blending, may lead to some children reading largely by a form of sight word reading underpinned only by superficial connections between print and sounds" (p.1382).

"This present study makes an important contribution to documenting the longterm effects of synthetic phonics teaching. Maintaining the gain in word reading for age would have been noteworthy, but in fact it increased over time, leading to a high level of attainment at the age of 10" (p. 1384).

Johnston, R.S., McGeown, S., & Watson, J.E. (2012). Long-term effects of synthetic versus analytic phonics teaching on the reading and spelling ability of 10 year old boys and girls. *Reading & Writing, 25*(6), 1365-1384.

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"In general, data indicate that intensive early interventions positively affect students' reading skills, resulting in lower rates of grade retention, reduced incidence of placement in special education, and higher rates of high school completion. Difficulties with reading may interfere with students' motivation and engagement at school and with learning" (p. 67).

"Difficulty with reading is one of the primary reasons students are recommended for grade retention or referred for special education evaluation, events that are consistently linked to later dropout. As students progress through levels of education, proficiency in reading becomes increasingly important as a means of garnering new knowledge; students who do not have sufficient skills are often unable to keep up with course content and expectations, leaving them to fall further and further behind their peers. It is also believed, however, that difficulties learning to read affect students' engagement, motivation, and connections to school (Guthrie & Wigfield, 2000; Klem & Connell, 2004; Snow et al., 1998), contributing to the gradual process of withdrawal that precedes later dropout (Finn, 1989)" (p.68).

"Numerous meta-analyses, reviews, and individual research papers report negative effects of grade retention (e.g., Holmes, 1989; Holmes & Matthews, 1984; Jimerson, 2001; Shepard & Smith, 1990; Silberglitt, Appleton, Burns, & Jimerson, 2006). The most recent of these meta-analyses found negative effects in terms of students' academic, socioemotional, and behavioral outcomeswhen retained students were compared to similar students promoted to the next grade (Jimerson, 2001). Despite the consistent findings regarding the effects of grade retention, retention rates have increased in the past several years (Frey, 2005; National Association of School Psychologists, 2003), likely a result of the proliferation of policies and public sentiment to end social promotion and the inclusion of grade retention as an integral

part of school reform and accountability initiatives (Bali, Anagnostopoulos, & Roberts, 2005). The marriage of grade retention and accountability appears to increase the likelihood of students being placed in special education (Roderick & Nagaoka, 2005), which is, for a number of students, a precursor of later dropout" (p.70).

Reschly, A.L. (2010): Reading and school completion: Critical connections and Matthew Effects. *Reading & Writing Quarterly: Overcoming Learning Difficulties, 26*(1), 67-90.

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"The retention rate of 1st-grade students decreased by 47% after RTI was implemented. … Grade-level retention has been linked with increased school dropout rates (Grissom & Shepard, 1989; Jimerson, Anderson, & Whipple, 2002; Roderick, 1995; Rumberger, 1995); greater academic failure (Meisels & Liaw, 1993; Reynolds, 1992); lower self-concept (Nason, 1991); and fewer employment opportunities, a greater number of arrests, and elevated rates of substance abuse compared to non-retained students (Cairns & Cairns, 1994; Catterall, 1987; Center for the Study of Social Policy, 1994). (p. 26). Murray, C.S., Woodruff, A.L., & Vaughn, S. (2010): First-grade student retention within a 3-tier reading framework. *Reading & Writing Quarterly: Overcoming Learning Difficulties, 26*(1), 26-50.

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"Results suggest that approximately 2.5 hr per school day of general education and small-group intervention literacy instruction is needed to bring students within average range" (p. 4).

"However, the results point to another facet beyond development that closely mirrors a medical model. When effective medicines are given at too low of a dosage, they fail to produce effective results. … Returning students to the same low levels of general education with insufficient intensity and duration of intervention fails to produce accelerated learning" (p.20).
Abbott, A., Wills, H., Greenwood, C.R., Kamps, D., Heitzman-Powell, L., & Selig, J. (2010): The combined effects of grade retention and targeted small-group intervention on students' literacy outcomes. *Reading & Writing Quarterly: Overcoming Learning Difficulties, 26*(1), 4-25.

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"The clearest message from automaticity research is that practice is necessary to develop skill. Repetition is a good thing. The research suggests that readers will benefit most from consistent practice" (p.139).

"Repeated reading is an effective method for teaching students to read fluently, motivated in part by the LaBerge and Samuels (1974) theory of automaticity" (p.140). Logan, G.D. (1997): Automaticity and reading: Perspectives from the instance theory of automatization. *Reading & Writing Quarterly: Overcoming Learning Difficulties, 13*(2), 123-146.

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The negligible effects of individualisation are particularly important when it is recognised that students spend about 66 percent of their time working alone (Rosenshine, 1979).

One of the common criticisms is that Direct Instruction works with very low-level or specific skills, and with lower ability and the youngest students. These are not the findings from the meta-analyses. The effects of Direct Instruction are similar for regular (d=0.99), and special education and lower ability students (d=0.86), higher for reading (d=0.89) than for mathematics (d=0.50), similar for the more low-level word attack (d=0.64) and also for high-level comprehension (d=0.54), and similar for elementary and high school students. The messages of these meta-analyses on Direction Instruction underline the power of stating the learning intentions and success criteria, and then engaging students in moving towards these. Summarised from (p. 206-7):
Hattie, J. A.C. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement.* London and New York: Routledge.

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Because word decoding is the primary bottleneck in the acquisition of skilled reading, it is not surprising to find underactivation among this population in brain areas associated with converting print to sound, even when reading sentences for comprehension. Children who have a school history of reading problems tend to have particular difficulty reading words, both in isolation and in context (Gayan & Olson, 2001). Instructional treatments that target word-decoding skills, such as those used in the present study, may induce characteristic changes in these areas of the brain.

Meyler, A., Keller, T.A., Cherkassky, V.L., Gabrieli, J.D., & Just, M.A. (2008) Modifying the brain activation of poor readers during sentence comprehension with extended remedial instruction: A longitudinal study of neuroplasticity. *Neuropsychologia, 46*(10), 2580-92.

This is an adage written by social scientist Donald T. Campbell in a 1976 paper. It says: "The more any quantitative social indicator is used for social decision-making, the more subject it will be to corruption pressures and the more apt it will be to distort and corrupt the social processes it is intended to monitor."

Abstract: Learning disabilities constitute a diverse group of disorders in which children who generally possess at least average intelligence have problems processing information or generating output. Their etiologies are multifactorial and reflect genetic influences and dysfunction of **brain** systems. Reading disability, or dyslexia, is the most common learning disability. It is a receptive language-based learning disability that is characterized by difficulties with decoding, fluent word recognition, rapid automatic naming, and/or reading-comprehension skills.

These difficulties typically result from a deficit in the phonologic component of language that makes it difficult to use the alphabetic code to decode the written word. Early recognition and referral to qualified professionals for evidence-based evaluations and treatments are necessary to achieve the best possible outcome.

Because dyslexia is a language-based disorder, treatment should be directed at this etiology. Remedial programs should include specific instruction in decoding, fluency training, vocabulary, and comprehension. Most programs include daily intensive individualized instruction that explicitly teaches phonemic awareness and the application of **phonics**. Vision problems can interfere with the process of reading, but children with dyslexia or related learning disabilities have the same visual function and ocular health as children without such conditions. Currently, there is inadequate scientific evidence to support the view that subtle eye or visual problems cause or increase the severity of learning disabilities.

Because they are difficult for the public to understand and for educators to treat, learning disabilities have spawned a wide variety of scientifically unsupported vision-based diagnostic and treatment procedures. Scientific evidence does not support the claims that visual training, muscle exercises, ocular pursuit-and-tracking exercises, behavioral/perceptual vision therapy, "training" glasses, prisms, and colored lenses and filters are effective direct or indirect treatments for learning disabilities. There is no valid evidence that children who participate in vision therapy are more responsive to educational instruction than children who do not participate. Handler, S.M. & Fierson, W.M (2011). Joint technical report-Learning disabilities, dyslexia, and vision. *Pediatrics 127*(3), 818-856.

Reading disability research has also established that reading difficulties are not caused by visual deficits of the types most often proposed over the years. Contrary to popular belief, impaired readers do not see letters and words in reverse, nor do they suffer from inherent spatial confusion or other visual anomalies of the types proposed in the early literature. More recent research provides suggestive evidence that some poor readers may suffer from low-level sensory deficits in both the visual and auditory spheres, but the evidence is inconclusive, and in, some instances, equivocal and controversial. Moreover, no causal relationships have been established between such deficits and difficulties in learning to read.

Vellutino, F.R., Fletcher, J.M., Snowling, M.J., & Scanlon, D.M. (2004). Specific reading disability (dyslexia): What have we learned in the past four decades? *Journal of Child Psychology and Psychiatry 45*(1), 2–40.

A joint statement of the American Academy of Pediatrics (Section on Ophthalmology, Council on Children with Disabilities), the American Academy of Ophthalmology, the American Association for Pediatric Ophthalmology and Strabismus and the American Association of Certified Orthoptists. Learning disabilities, including reading disabilities, are commonly diagnosed in children. Their etiologies are

multifactorial, reflecting genetic influences and dysfunction of brain systems. Learning disabilities are complex problems that require complex solutions. Early recognition and referral to qualified educational professionals for evidence-based evaluations and treatments seem necessary to achieve the best possible outcome. Most experts believe that dyslexia is a language-based disorder. Vision problems can interfere with the process of learning; however, vision problems are not the cause of primary dyslexia or learning disabilities. Scientific evidence does not support the efficacy of eye exercises, behavioral vision therapy, or special tinted filters or lenses for improving the long-term educational performance in these complex pediatric neurocognitive conditions. Diagnostic and treatment approaches that lack scientific evidence of efficacy, including eye exercises, behavioral vision therapy, or special tinted filters or lenses, are not endorsed and should not be recommended.  American Academy of Pediatrics. (2009). Learning disabilities, dyslexia and vision. Retrieved from
http://pediatrics.aappublications.org/content/124/2/837.short

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 Because teachers are kept in ignorance of specific learning difficulties, students are under diagnosed and under supported. Teachers are not able to recognise the signs which should lead to testing by a psychologist or specialist in specific learning difficulties. Furthermore, they often don't know who the student should be referred to. (sub. DR76, p. 2)" (Productivity Commission, 2012, p.284). Productivity Commission. (2012). *Schools Workforce*. Research Report, Canberra. JEL code: I21, I28, J24. Retrieved from http://www.pc.gov.au/projects/study/education-workforce/schools/report

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 Teacher training  "... All too often Victoria's teacher training, referred to as pre-service education, falls short of the demands of today's schools. While there are many providers, quality outcomes are inconsistent. Principals report that in the case of more than one-third of teachers, insufficient pedagogical preparation hinders student instruction.

14 The market does not provide transparent data about the quality of graduates and has not been open to competition from new entrants, such as high quality providers from overseas that have obtained better results. Despite being the largest employer of graduates in Victoria, the Department of Education and Early Childhood Development has not used its influence to make providers more responsive to schools' needs.

In our decentralised system demand from principals, as the direct employers of graduates, will drive improvements in pre-service education, rather than the Department. At present less than 30 per cent of principals feel new teachers are well prepared to communicate with parents, manage classroom activities well, and provide effective support and feedback to students, which are all largely recognised as important skills for effective teaching and learning.

15 Around 15 to 20 per cent of graduates are not employed as teachers following graduation and only around half report satisfaction with the preparation provided by their courses.

A recent review of the practical component of these programs found large variability between providers, which is significant given that practical school experience has one of the greatest impacts on student outcomes, and graduates themselves regard this component of teacher education as one of the most valuable.

16 There is a clear need for pre-service teacher education programs to respond to changing circumstances and to prepare graduates with the skills and motivation they need to become great teachers. We also need all Victorian schools, including the nongovernment sector, to work with universities to provide practicum placements for preservice teachers in their schools..."
DEECD. (2012). *New directions for school leadership and the teaching profession: Discussion paper*, June 2012. Department of Education and Early Childhood Development. Retrieved from
http://www.eduweb.vic.gov.au/edulibrary/public/commrel/about/teachingprofession.pdf

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 "In 2008, 19.6 per cent of Australian students were at or below the National Minimum Standard (NMS) in reading, and 18.7 per cent were at or below the NMS in numeracy. International data also shows that

although Australian students ranked highly in literacy and numeracy skills compared to the rest of the world, Australian testing results have declined in reading (2000–2009) and mathematics (2003–2009)".

"ANAO analysis of NAPLAN data from 2008 to 2011 indicates that the LNNP is yet to make a statistically significant improvement, in any state, on the average NAPLAN results of schools that received LNNP funding, when compared to schools that did not receive funding" (Para 17).

Australian National Audit Office. (2012). *National Partnership Agreement on Literacy and Numeracy*. Retrieved from http://www.anao.gov.au/Publications/Audit-Reports/2011-2012/National-Partnership-Agreement-on-Literacy-and-Numeracy/Audit-brochure

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ALMOST half of aspiring primary school teachers failed parts of a landmark test featuring literacy and numeracy questions that Year 7 students should be able to answer**.** Figures released by the Queensland College of Teachers reveal about 40 per cent of third or fourth-year teaching students who sat the trial Pre-Registration for Aspiring Primary Teachers Test failed the literacy, numeracy or science component. Chilcott, T. (2012). Student teachers fail primary school-level tests. *The Courier Mail,* June 11.

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Print Awareness and Reading Achievement A new study indicates that making one small change in how we read aloud to preschoolers can make a big difference in literacy achievement. The small change? Pointing out printed words as we read aloud. Researchers have been studying the impact of this simple intervention on a group of preschoolers from at-risk communities. So far, the kids have been followed for two years and according to the most recent findings (published in the journal *Child Development*), these small changes make a measurable difference. "Children who focused their attention on print … had better literacy outcomes than those who did not," says Shane Piasta, one of the researchers. "It was very clear."

Piasta, S. B., Justice, L. M., McGinty, A. S. and Kaderavek, J. N. (2012). Increasing young children's contact with print during shared reading: Longitudinal effects on literacy achievement. *Child Development, 83*(3), 810–820. doi: 10.1111/j.1467-8624.2012.01754.x

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On May 18, Jeffrey Zients, Acting Director of the Office of Management and Budget (OMB), sent out a memo that could change history. In guidance to executive departments and agencies, the memo asks the entire Executive Branch to use every available means to promote the use of rigorous evidence in decision-making, program administration, and planning.
http://www.whitehouse.gov/sites/default/files/omb/memoranda/2012/m-12-14.pdf

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"Consistent with previous reviews of similar focus, the findings suggest that education technology generally produced a positive, though small, effect (ES=+0.16) in comparison to traditional methods. However, the effects may vary by education technology type. In particular, the types of supplementary computer-assisted instruction programs that have dominated the classroom use of education technology in the past few decades are not producing educationally meaningful effects in reading for K-12 students. In contrast, innovative technology applications and integrated literacy interventions with the support of extensive professional development showed somewhat promising evidence. However, too few randomized studies for these promising approaches are available at this point for firm conclusions.  Cheung, A., & Slavin, R.E. (2012, April). *The effectiveness of educational technology applications for enhancing reading achievement in k-12 classrooms: A meta-analysis.* Baltimore, MD: Johns Hopkins University, Center for Research and Reform in Education. Retrieved from http://www.bestevidence.org/reading/tech/tech.html

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"Key findings from extensive meta-analytic syntheses of evidence-based reading research – many of which are cited in this review – consistently indicate that since systematic, explicit phonics approaches are significantly more effective than nonsystematic approaches for children with and without reading difficulties, it is vital that children should initially be provided with direct instruction in phonics as an essential part of a comprehensive and integrated reading program that includes meaning-centred approaches" (p.11).
National Inquiry into the Teaching of Literacy. (2005). *Teaching Reading: A review of the evidence-based research literature on approaches to the teaching of literacy, particularly those that are effective in*

*assisting students with reading difficulties*. Commonwealth of Australia. Retrieved from
www.dest.gov.au/nitl/documents/literature_review.rtf

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 "After half a century of advocacy associated with instruction using minimal guidance, it appears that there is no body of sound research that supports using the technique with anyone other than the most expert students. Evidence from controlled experimental (a.k.a. "gold standard") studies almost uniformly supports full and explicit instructional guidance rather than partial or minimal guidance for novice to intermediate learners. These findings and their associated theories suggest teachers should provide their students with clear, explicit instruction rather than merely assisting students in attempting to discover knowledge themselves" (p.11). Clark, R.E., Kirschner, P.A., & Sweller, J. (2012). Putting students on the path to learning: The case for fully guided instruction. *American Educator*, March 23, 2012. Retrieved from http://www.aft.org/pdfs/americaneducator/spring2012/Clark.pdf

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 "In the category of "strong evidence of effectiveness" were several programs. Success for All, with an effect size of +0.52 in 9 studies, had more evidence of strong effects than any other program. Direct Instruction, a whole-class instructional process approach (ES=+0.37 in 2 small studies) and Corrective Reading, a remedial small group form of Direct Instruction (ES=+0.71 in 2 studies) were considered together as having strong evidence (ES=+.56 in 4 studies)" (p.112). Slavin, R.E., Lake, C., Davis, S., & Madden, N. (2009, June) *Effective programs for struggling readers: A best evidence synthesis*. Baltimore, MD: Johns Hopkins. Retrieved from www.bestevidence.org/word/strug_read_Jun_02_2010.pdf

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 "The evidence does not support the idea that a relatively brief tutoring experience in first grade is enough to ensure success throughout elementary school and beyond, but it does suggest that with a continuing focus on effective classroom instructional models, most children who receive effecting tutoring interventions in first grade can be kept on track in reading" (p.109).
Slavin, R. E., Lake, C., Davis, S. & Madden, N. A. (2009, April). *Effective programs for struggling readers: A best-evidence synthesis*. Paper presented at the annual meetings of the American Educational Research Association, San Diego, CA. Retrieved from
http://www.bestevidence.org/word/strug_read_Jun_02_2010.pdf

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 "We (educational researchers) do our science under conditions that physical scientists find intolerable. We face particular problems and must deal with local conditions that limit generalizations and theory building – problems that are different from those faced by the easier-to-do sciences (chemistry, biology, medicine" (p.18). Berliner, D.C. (2002). Educational research: The hardest science of all. *Educational Researchers, 31*(8), 18-20.

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 "At the moment children who struggle with significant problems get some level of funding, but other children with problems don't. If we can meet those children's needs and they can engage with school they will go on. But if we don't, they'll keep disengaging to the point where they just leave school." Associate Professor Sharon Goldfeld, paediatrician in charge of Australia's national data base Australian Early Development Index (AEDI) on child health - quoted in:  Milburn, C. (2012).  Schools stagger under young burden. The Age, 7 May 2012.

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From Galletly and Knight 2004, 2011; Share 2008:
• Most new world leaders in PISA 2003 and 2006 are nations with transparent orthographies, as are previous leaders. These include Finland, Japan, Korea, Hong Kong, Liechtenstein, Netherlands, Poland, Belgium, Estonia, Taiwan.
• Highest achieving nations with transparent-orthographies achieve highest results by having only very small proportions of low achievers, as well as large proportions of high achievers.
• High achieving Anglophone nations show polarised results with large proportions of high achievers but also large proportions of low achievers (which they have not been able to reduce despite higher expenditure on education than the highest-achieving transparent-orthography nations).

• The only nations showing reduced proportions of low achievers are transparent orthography nations (p.188).

Galletly, S.A., & Knight, B.A. (2013). Because trucks aren't bicycles: Orthographic complexity as an important variable in reading research. *The Australian Educational Researcher, 40*(2), 173-194.

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"Fluent decoding appears to be an important predictor of reading comprehension across elementary, middle, and high school" (p.463).

Kershaw, S., & Schatschneider, C. (2012). A latent variable approach to the simple view of reading. *Reading & Writing: An Interdisciplinary Journal, 25*(2), 433–464.

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"**Explicit instruction** is a systematic instructional approach that includes a set of delivery and design procedures derived from effective schools research merged with behavior analysis (Hall, 2002). **Instructional design** refers to the way in which information in a particular domain (e.g., phonemic awareness, reading, mathematics) is selected, prioritized, sequenced, organized, and scheduled for instruction within a highly orchestrated series of lessons and materials that make up a course of study (Simmons & Kame'enui, 1998). According to Smith and Ragan (1993), instructional design refers to the ''systematic process of translating principles of learning and instruction into plans for instructional materials and activities'' (p. 2). Instructional design is concerned with the intricacies of analyzing, selecting, prioritizing, sequencing, and scheduling the communication of information before it is packaged for delivery or implemented. In other words, it is the behind-the-scenes activity that appears as the sequence of objectives, schedule of tasks, components of instructional strategies, amount and kind of review, number of examples, extent of teacher direction, and support explicated in teachers' guides and lesson plans" (p.145-6).

Pollard-Durodola, S.D., & Simmons, D.C. (2009): The role of explicit instruction and instructional design in promoting phonemic awareness development and transfer from Spanish to English. *Reading & Writing Quarterly: Overcoming Learning Difficulties, 25*(2-3), 139-161.

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"This article argues that reading interventions are a key dropout prevention strategy. A review of the literature connects reading skills and interventions with events such as grade retention, placement in special education, and high school dropout. In general, data indicate that intensive early interventions positively affect students' reading skills, resulting in lower rates of grade retention, reduced incidence of placement in special education, and higher rates of high school completion. Difficulties with reading may interfere with students' motivation and engagement at school and with learning. The article presents an integrated model describing spiraling, or Matthew, effects across reading competence, student engagement and motivation, and eventual high school completion or dropout" (p.67).

Reschly, A.L. (2010): Reading and school completion: Critical connections and Matthew Effects. *Reading & Writing Quarterly: Overcoming Learning Difficulties, 26*(1), 67-90.

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"As the pressure has grown for teachers, schools, districts, and states to increase the number of students who meet state-governed reading proficiency, the lure of student retention as a remedy for low student academic achievement has become more popular (Hess, 2004). An alternative ideology is intensive direct instruction in core literacy components plus a systematic small-group intervention (SGI) to remediate poor literacy skills and to promote grade-level performance on standardized academic measures" (p.5).

"Results from this study indicate that it is unwise to return students to the same insufficient academic environment that failed them in the first place … a plan needs to be created to massively strengthen literacy instruction in terms of both intensity and length of instruction" (p.22).

"Results suggest that approximately 2.5 hr per school day of general education and small-group intervention literacy instruction is needed to bring students within average range" (p.4).

Abbott, M., Wills, H., Greenwood, C.R., Kamps, D., Heitzman-Powell, L., & Selig, J. (2010): The combined effects of grade retention and targeted small-group intervention on students' literacy outcomes. *Reading & Writing Quarterly: Overcoming Learning Difficulties, 26*(1), 4-25.

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Interventions for older students with reading difficulties

"Although it is unlikely that these students will make accelerated progress without intensive interventions, there is evidence that secondary students may experience improved reading outcomes when provided explicit reading intervention with adequate time and intensity for reading instruction (Archer, Gleason, & Vachon, 2003; Torgesen et al., 2001)" (p.932).

Vaughn, S., Wanzek, J., Wexler, J., Barth, A.E., Cirino, P.T., Fletcher, J.M., Romain, M.A., Denton, C.A., Roberts, G., & Francis, D.J. (2010). The relative effects of group size on reading progress of older students with reading difficulties. *Reading and Writing: An Interdisciplinary Journal, 23*(8)*,* 931-956.

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"Research evidence has shown that two of the most significant predictors of success in alphabetic literacy acquisition are knowledge of alphabet letters and early phonological awareness skills (Adams, 1990; Ball & Blachman, 1991; Bradley & Bryant, 1983; Byrne & Fielding-Barnsley, 1989; Cardoso-Martins, Resende, & Rodrigues, 2002; Stuart & Coltheart, 1988)" (p.27).

Manolitsis, G., & Tafa, E. (2011). Letter-name letter-sound and phonological awareness: Evidence from Greek-speaking kindergarten children. *Reading and Writing: An Interdisciplinary Journal*, *24*(1)*,* 27-53.

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"Moreover, the results of this study imply that any improvement in basic processes involved in reading proficiency produced by the whole language approaches to reading instruction for both the normal and the low achieving readers dissipates by grade three" (p.545).

Faust, M., & Kandelshine-Waldman, O. (2011) The effects of different approaches to reading instruction on letter detection tasks in normally achieving and low achieving readers *Reading and Writing: An Interdisciplinary Journal*, *24*(5), 545–566.

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In first grade, letter sound fluency (LSF) was a unique predictor of oral reading fluency level.

Speece, D. L., & Ritchey, K. D. (2005). A longitudinal study of the development of oral reading fluency in young children at risk for reading failure. Journal of Learning Disabilities, 38, 387–399.

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"Collectively the results indicate that decodability is a critical characteristic of early reading text as it increases the likelihood that students will use a decoding strategy and results in immediate benefits, particularly with regard to accuracy" (p.1).

Cheatham, J.P., & Allor, J.H. (2011). The influence of decodability in early reading text on reading achievement: a review of the evidence. *Reading and Writing: An Interdisciplinary Journal*, (4 January 2012), 1-24, doi:10.1007/s11145-011-9355-2

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"A major goal of Tier 2 or secondary intervention is to allow the majority of students with learning (e.g., reading) difficulties to attain grade-level expectations. If students with below-grade- level performance are to catch up with normally developing students, their rate of growth must be *accelerated*; simply learning at an average rate will only maintain the deficit. Thus, Tier 2 interventions must be intensive enough to not only improve students' performance, but to actually enable students with learning difficulties to progress at rates that are *faster* than the learning rates of average students. At the same time, these interventions must be feasible for teachers to implement and sustain" (p.433).

Vaughn, S., Denton, C. A., & Fletcher, J. M. (2010). Why intensive interventions are necessary for students with severe reading difficulties. *Psychology in the Schools, 47*(5), 432–444.

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**UK Study: Parents, Not Teachers, Key to Education**
A new study finds that pupil attainment and ability is affected five times more by parental influence than by teachers. http://www.educationnews.org/parenting/uk-study-parents-not-teachers-key-to-education/

The study, led by Dr Arnaud Chevalier, from Royal Holloway, University of London, analysed data for teenagers at Danish schools between 2002 and 2010. It compared pupils who were forced to change school at the age of 16 to brothers or sisters who remained in the same secondary throughout their teenage years. Using the data, they tested the differences in pupils' exam results between the two stages to assess the relative influence of various factors such as children's school, families and individual pupil characteristics. The study found that the parental impact on results was far higher than that for schools themselves. "Half

of the variation in test scores is attributable to shared family factors, while schools only account for 10 per cent," it was claimed. The remaining variation was down to pupils themselves. Researchers said the effect of families on test scores remained the same irrespective of household income.

**Teachers key to Education**
"The debate about VA (value adding) stems from two fundamental questions. First, does VA accurately measure teachers' impacts on scores or does it unfairly penalize teachers who may systematically be assigned lower achieving students? Second, do high VA teachers improve their students' long-term outcomes or are they simply better at teaching to the test? Researchers have not reached a consensus about the accuracy and long-term impacts of VA because of data and methodological limitations.

We address these two questions by tracking one million children from a large urban school district from 4th grade to adulthood. We evaluate the accuracy of standard VA measures using several methods, including natural experiments that arise from changes in teaching staff. We find that when a high VA teacher joins a school, test scores rise immediately in the grade taught by that teacher; when a high VA teacher leaves, test scores fall. Test scores change only in the subject taught by that teacher, and the size of the change in scores matches what we predict based on the teacher's VA. These results establish that VA accurately captures teachers' impacts on students' academic achievement and thereby reconcile the conflicting conclusions of Kane and Staiger (2008) and Rothstein (2010)" (p.1).
Raj Chetty, R., Friedman, J.N., & Rockoff, J.E. (2011). The long-term impacts of teachers: Teacher value-added and student outcomes in adulthood. Executive Summary of National Bureau of Economic Research Working Paper No. 17699, December 2011. Retrieved from
http://obs.rc.fas.harvard.edu/chetty/va_exec_summ.pdf

"At present, though, genetic, structural and functional findings remain largely correlational and unconnected with one another. Results are provocative, but much work still is needed to move from a list of "neurophenotypes" towards a causal theory of gene-brain behavior relations in reading acquisition and RD" (p.22).
Pugh, K., & Hagan, E.C. (2010). New directions in the cognitive neuroscience of reading development and reading disability. *Perspectives on Language and Literacy, 36*(1), 22-25.

"Thus, although assessing cognitive processes for intervention purposes may not be associated with qualitatively distinct cognitive characteristics and may not justify the extensive assessments as proposed by Hale et al. (2010), assessment of reading components and other academic skills appears to be well be justified"(p. 19).
Fletcher, J.M., Stuebing, K.K., Barth, A.E., Denton, C.A., Cirino, P.T., Francis, D.J., & Vaughn, S. (2011). Cognitive correlates of inadequate response to intervention. *School Psychology Review, 40*(1), 3-22.

"Greater national wealth or higher expenditure on education does not guarantee better student performance. Among high-income economies, the amount spent on education is less important than how those resources are used. Successful school systems in high-income economies tend to prioritise the quality of teachers over the size of classes. School systems that perform well in PISA believe that all students can achieve, and give them the opportunity to do so" (p. 2).
OECD. (2012). Does money buy strong performance in PISA? *Pisa in Focus, 13,* 2012/02 (February). Retrieved from http://www.pisa.oecd.org/dataoecd/50/9/49685503.pdf

"Across studies, the generalized findings are that Matthew effects are present in LD and that disadvantaged students continue to be at a great disadvantage in the future. This finding was evident particularly with regard to the relationship between vocabulary and reading comprehension (Oakhill & Cain; Sideridis et al.) as well as with regard to other reading skills such as phonological awareness (McNamara et al.) or math abilities (e.g., Morgan et al.; Niemi et al.). When looking at the framework of responsiveness to instruction implemented in the United States and various parts of the world, the message from the present studies is clear: Students with LD are likely to be classified as nonresponders as their trajectories of growth suggest. We need to switch our attention from assessing the difficulties of students with LD to how to intervene to solve their problems" (Sideridis, 2011, p.401).

Sideridis, G.D. (2011). Exploring the presence of Matthew Effects in learning disabilities. *Journal of Learning Disabilities, 44*(4), 399-401.

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"Focus, then, must be two-fold. First is the focus on ensuring appropriate environmental and nutritional conditions that stimulate dendritic growth in infancy and early childhood. But second must be emphasis on improving the strength of particular neural circuits, not simply on the overall growth of dendrites. Most interestingly, instructional activities such as memorization, mastery learning, and repetition-based activities appear to best strengthen and solidify the formation and maintenance of these circuits (Garrett, 2009; Freeberg, 2006). Data strongly support the use of precision teaching, mastery learning approaches, and programs such as DISTAR or direct instruction (Kirschner, Sweller, & Clark, 2006; Mills, Cole, Jenkins, & Dale, 2002; Ryder, Burton, & Silberg, 2006; Swanson & Sachse-Lee, 2000). In addition, programs that focus on mastery, including applied behavior analysis and evidence-based approaches such as Treatment and Education of Autistic and related Communication Handicapped Children (TEACCH) (Mesibov & Shepler, 2004; Panerai, Ferrante, & Zingale, 2002), have been shown to elicit better educational growth than instructional practices, which focus on open-ended or child-guided instructional practices. Thus, given the data from neuroscience combined with evidence-based practices used in special education, special educators can be assured that they are, indeed, using brain-based educational instruction. Mastery-based programs that focus on fluency and repetition are most likely to increase both better traditional learning outcomes and produce neural circuits critical for both educational activities and transfer to daily living skills" (p. 46).

Alferink, L.A., & Farmer-Dougan, V. (2010): Brain-(not) based education: Dangers of misunderstanding and misapplication of neuroscience research, *Exceptionality, 18*(1), 42-52.

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"For example, the research described above on the formation of memory through long-term potentiation strongly suggests that neural connections are strengthened through repetition or practice (Freeberg, 2006; Garrett, 2008; Hardiman, 2003). Note that the importance of practice and rehearsal has been known for more than a century, long before the process of long-term potentiation was identified (Ebbinghaus, 1913; Hebb, 1949; Thorndike, 1913). Likewise, the data suggest that formation of memories through neural consolidation works best if students have a number of short learning sessions separated over time, not single long sessions. Again, the advantages of spaced or distributed practice over massed practice have also been known for many decades (see Olson & Hergenhahn, 2009; Ebbinghaus, 1913). Neuroscience, in this case, reinforced these best practices by providing the data at the neural level that supported these methods" p.50).
Alferink, L.A., & Farmer-Dougan, V. (2010): Brain-(not) based education: Dangers of misunderstanding and misapplication of neuroscience research, *Exceptionality, 18*(1), 42-52.

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Simmons and Kame'enui (1998) suggest the following formula to determine whether to focus on accuracy or fluency: More than one error every 10 words: Work on accuracy. Fewer errors (one in 15–20 words) but a low speed: Work on fluency.
Kame'enui, E. J., & Simmons, D. C. (1998). Beyond effective practice to schools as host environments: Building and sustaining a school-wide intervention model in beginning reading. *Oregon School Study Council, 41*(3), 3–16.

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"Students who start with low phonological awareness develop reading ability at much slower rates".
McNamara, J.K., Scissons, M., & Gutknecth, N. (2011). A longitudinal study of kindergarten children at risk for reading disabilities**:** The poor really are getting poorer. *Journal of Learning Disabilities*, *44*(4), 21-430.

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"Across studies, the generalized findings are that Matthew effects are present in LD and that disadvantaged students continue to be at a great disadvantage in the future" (p.401).
Sideridis, G.D. (2011). Exploring the presence of Matthew Effects in learning disabilities. *Journal of Learning Disabilities, 44*(5) 399–401.

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"CBM was designed to provide educators with a set of tasks that were reliable, valid, low-cost, and time-efficient indicators of student achievement in core academic areas. In reading, there is remarkable consistency in the relationship between R-CBM and other standardized measures of reading achievement across decades, samples, and various achievement tests. These results are extraordinary when one considers the brevity, availability, and low-cost of R-CBM. Educators should have great confidence in their use of R-CBM as an indicator of students' overall reading achievement" (p.463).

Reschly, A.L., Busch, T.W., Betts, J. Deno, S.L., & Long, J.D. (2009). Curriculum-Based Measurement Oral Reading as an indicator of reading achievement: A meta-analysis of the correlational evidence, *Journal of School Psychology, 47*(6), 427-469.

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"Post hoc analyses of early intervention outcomes for 128 at-risk first graders revealed that Verbal IQ was a minor contributor to word identification skills relative to specific reading related language predictors like phonological processing, rapid naming, and orthographic skills (Stage et al., 2003)" (p.100).
Morris, R.D., Lovett, M.W., Wolf, M., Sevcik, R.A., Steinbach, K.A., Frijters, J.C., & Shapiro, M.B. (2012). Multiple-component remediation for developmental reading disabilities: IQ, socioeconomic status, and race as factors in remedial outcome. *Journal of Learning Disabilities, 45*(2), 99-127.

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"Recent work by Frijters at our Toronto site (Frijters et al., 2004; Frijters, De Palma, Barron, & Lovett, 2005) indicates that motivational differences among disabled readers mediate their response to intervention. Frijters's work confirms that motivation for reading is not a unitary construct and that different preintervention motivational profiles can be identified in children with RD. These profiles predict responsiveness to remediation, indicating that motivation mediates remedial response. In addition, motivation appears to be amenable to modification in its interaction with intervention (Frijters et al., 2005; Frijters, Dodsworth, Lovett, Sevcik, & Morris, 2009)" (p.122).
Morris, R.D., Lovett, M.W., Wolf, M., Sevcik, R.A., Steinbach, K.A., Frijters, J.C., & Shapiro, M.B. (2012). Multiple-component remediation for developmental reading disabilities: IQ, socioeconomic status, and race as factors in remedial outcome. *Journal of Learning Disabilities, 45*(2), 99-127.

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"The variance explained by ISF in the fall of kindergarten was consistent with previous studies ( [Good and Kaminski, 2002] and [Good et al., 2001]), and demonstrated that ISF in the beginning of kindergarten significantly predicted and accounted for variability on end-of-kindergarten measures of nonsense words, word identification, and reading comprehension. This study extends those findings by demonstrating that ISF in the beginning of kindergarten significantly predicts later reading performance for ELLs" (p.389).
Linklater, D.L., O'Connor, R.E., & Palardy, G.J. (2009). Kindergarten literacy assessment of English Only and English language learner students: An examination of the predictive validity of three phonemic awareness measures, *Journal of School Psychology, 47*(6), 369-394.

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Over the past 25 years, research on Curriculum-Based Measurement (CBM) has supported the validity and reliability of CBM measures as indicators of growth in basic academic skills (Deno, 2003; Marston, 1989; Wayman, Wallace, Wiley, Ticha, & Espin, 2007; Yeo, 2008, 2010, 2011).
Seungsoo, Y., Dong-Il, K., Lee Branum-Martin, L., Wayman, M.M., & Espin, C.A. (2012). Assessing the reliability of curriculum-based measurement: An application of latent growth modelling. *Journal of School Psychology*, *50*(2), 275-292.

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"Finally, evidence The influence of research and evidence on decision making has even greater value for those students with disabilities that, in most instances, even if a special education teacher is available as a co-teacher in the general education classroom, high-quality, intensive instruction is most often not delivered in the general education classroom (Murawski, 2006; Murawski & Swanson, 2001; Scruggs, Mastropieri, & McDuffie, 2007; Volonino & Zigmond, 2007). While a special educator working as a co-teacher could theoretically provide this instruction, research evidence shows that in most cases, this does not occur (Volonino & Zigmond, 2007). Observations in these classrooms have shown that responsibility

for teaching the content typically remains with the general education teacher, while the special educator "provides scaffolding and support to help learners access the content" (Volonino & Zigmond, 2007 (p. 298) (p.51)".

McLeskey, J., & Waldron, N. (2011). Educational programs for elementary students with learning disabilities: Can they be both effective and inclusive? *Learning Disabilities Research & Practice, 26*(1), 48–57. http://onlinelibrary.wiley.com/doi/10.1111/j.1540-5826.2010.00324.x/full

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"Key questions that are raised by these reviews relate to the nature of "high-quality" instruction, and where it can be effectively delivered. We contend that research that has been conducted over the last decade provides evidence that this instruction is best delivered in part-time, separate special education settings, and that full inclusion is not a feasible alternative for meeting the basic academic needs in reading and math for most students with LD".
McLeskey, J., & Waldron, N. (2011). Educational programs for elementary students with learning disabilities: Can they be both effective and inclusive? *Learning Disabilities Research & Practice, 26*(1), 48–57.

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"A substantial body of NIFDI research has examined the effectiveness of the DI curricula. These studies have confirmed the accumulated findings of decades of other studies showing that students studying with DI have higher achievement scores and stronger growth rates than students studying with other curricula. These results have appeared with reading[1,2,8,9,10,13,15] and math[7]; in urban[1,2,7], rural[2,8] and suburban[8,13,15] settings; with middle class high achieving students[13]; with high risk students[16], general education students[1,2,7,8,9,10,13,15,16] and special education students[15]; with schools that are predominantly African American[1,7,9], those with substantial numbers of Hispanic students[2,8,15] and those with large numbers of non-Hispanic whites[8,13,15]; and with children from pre-school age[10] through middle school[4]. The strong positive results appear in studies examining state test scores[4], curriculum-based measures[2,4,8,10] and norm-referenced tests[1,4,7,9,10]; in the United States as well as in other countries[11] and with randomized control trials[10,13,14] as well as quasi-experimental designs[1,2,4,7,8,9,11,15] ".
The National Institute for Direct Instruction (2012). NIFDI's Research Office.
http://www.nifdi.org/15/nifdis-research-office

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"Whereas many typically achieving students can make up for lost time, learn well independently, and make up for mistakes made by educators, special education students cannot. The influence of research and evidence on decision making has even greater value for those students with disabilities who most require precision in their instructional and behavioral plans" p.27).
Vaughn, S., & Dammann, J.E. (2001). Science and sanity in special education. *Behavioral Disorders, 27*(1), 21–29.

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"Nearly one-third of Australian Year 9 students perform at or below only the very the basic minimum level of writing literacy".
Jensen, B. (2010). NAPLAN tests help champion equality in the classroom. *The Age,* Thursday 15 April 2010

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"For each extra year of education, the average Australian can expect to earn 5 to 12 per cent more a year. These figures are in line with international evidence that estimates returns of about 10 per cent. Years of schooling, along with initial income, explain roughly one-quarter of variation in countries' GDP".
Daley, J. & Jensen, B. (2010). Strategy that gets top marks. *The Australian Financial Review*, Tuesday 17 August, (p. 63).

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"Jensen says there are five main mechanisms to improve teacher effectiveness: boost the quality of applicants to the profession; improve the quality of teachers' initial education and training; appraise and provide feedback to improve teachers once they're working; recognise and reward effective teachers; and move on ineffective teachers who have been unable to increase their effectiveness through improvement programs".

Gittins, R. (2012). Education success is about more than money. The Age, 29 February, P. 13.

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"Although there is no agreed on number of how many students makes a "small group," group size can vary significantly from 1-to-1 to as many as 1-to-10. Although not conclusive for making individual student-level decisions, there is compelling research indicating that instruction provided to groups of 3 to 5 students is as effective as 1-to-1 instruction, even for the most at-risk students (Elbaum, Vaughn, Hughes, & Moody, 2000)" .

Wanzek, J., & Vaughn, S. (2008). Response to varying amounts of time in reading intervention for students with low response to intervention. *Journal of Learning Disabilities, 41*(2), 126-142.

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"Our research highlights the importance of using measures that assess the fluency or automaticity of skill development (i.e., phonological awareness, letter knowledge, connected text). It is not enough for a student to be simply accurate on the component skills of reading; the skills must be so well developed that the accuracy and pace of performance is effortless in order to support continued reading development (Ehri, 2005; Harn, Stoolmiller, & Chard, 2008). Students who do not display this ease early in their reading development are the most in need of intensive instructional supports".

Harn, B.A. Jamgochian, E., & Parisi, D.M. (2009). *Characteristics of students who don't respond to research-based interventions.* Council for Exceptional Children**.**
http://www.cec.sped.org/AM/Template.cfm?Section=CEC_Today1&TEMPLATE=/CM/ContentDisplay.cfm&CONTENTID=10645

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"Although the OECD average for reading literacy has not changed between 2000 and 2009, ten countries have significantly improved their performance over this time, while five countries, including Australia, have declined significantly. … Australia's reading literacy performance has declined, not only in terms of rankings among other participating countries but also in terms of average student performance. The mean scores for Australian students in PISA 2000 was 528 points, compared to 515 for PISA 2009. A decline in average scores was also noted between PISA 2000 and PISA 2006, when reading literacy was a minor domain."

Highlights from the full Australian Report: Challenges for Australian Education: Results from PISA 2009

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"We have identified the Government's approach to teaching children diagnosed with dyslexia to read—namely, a structured phonics-based programme—is evidence-based on the best available evidence" (para 86, p.31).

House of Commons Science and Technology Committee (2009). *Evidence Check 1: Early Literacy Interventions*. House of Commons, London: The Stationery Office Limited.

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"Few interventions improved conventional literacy skills or the precursor skills most related to later literacy growth, the exception being code-focused interventions" (p.ix).

"It should be noted that the interventions that produced large and positive effects on children's code-related skills and conventional literacy skills were usually conducted as one-on-one or small-group instructional activities. These activities tended to be teacher-directed and focused on helping children learn skills by engaging in the use of those skills. Almost all of the code-focused interventions included some form of PA intervention. These PA activities generally required children to detect or manipulate (e.g., delete or blend) small units of sounds in words. Few of the interventions used rhyming activities as the primary teaching approach. Teaching children about the alphabet (e.g., letter names or letter sounds) or simple phonics tasks (e.g., blending letter sounds to make words) seemed to enhance the effects of PA training" (p. x).

Lonigan, C.J., & Shanahan, T. (2008). *Executive Summary. Developing Early Literacy: Report of the National Early Literacy Panel*. Jessup, MD: National Institute for Literacy.

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"*Modules crafted by evolution and refined by experience* It is generally accepted that humans are evolutionarily 'prepared' for language. Of course, this is an abstract sort of preparation, one that allows for the acquisition of any human language depending on the experiences we have as infants and young

children. We are also evolutionarily prepared for visual pattern recognition. This point is often not emphasized, however, perhaps because we do not differ from all other species in this regard. Communication and vision are of great importance to human survival, thus the modules that mediate language and visual pattern recognition are characterized by highly redundant coding schemes enabling them to function reasonably well even in the presence of small insults or degraded inputs. In contrast, written language is a human artifact of recent vintage, and therefore the mechanisms for decoding it (viz. reading) have not been used by the species long enough for evolution to have improved them via natural selection. The natural function of naming the objects and events we experience visually is mediated by pathways linking the language and visual pattern recognition modules.

Reading, attaching names and meanings to visual symbols and groups of symbols (lexical access), involves the opportunistic use of these pathways. Through repeated reading experiences, the modules and pathways involved in this artificial collaboration become relatively more and more efficient. In the normal reader this will be reflected in the development of a visual word form system, as well as a representation (either explicit or implicit) of the grapheme-phoneme correspondences in an alphabetic writing system. Skilled reading of prose for comprehension depends on a coordination of parallel activities: voluntarily guided visual scanning, visually driven lexical access, and the natural processes of spoken language comprehension and production. Breakdowns in the acquisition of this complex coordination (skill) are referred to as developmental dyslexia" (p.227).

Klein, R.M. (2002). Observations on the temporal correlates of reading failure. *Reading and Writing: An Interdisciplinary Journal,* 15**,** 207–232.

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"Older students demonstrate a broad and complex range of difficulties related to reading. These include problems in recognizing words, understanding word meanings, and understanding and connecting with text; students often lack background knowledge required for reading comprehension (Biancarosa & Snow, 2004). We examined several syntheses on interventions for secondary students with reading difficulties to identify effective interventions to meet this range of reading difficulties. Edmonds et al. (2009) conducted a meta-analysis examining the effects of adolescent reading interventions (Grades 6 through 12) that included instruction in decoding, fluency, vocabulary, or comprehension on reading comprehension outcomes. Analyses revealed a mean weighted effect size in the moderate range in favor of treatment students over comparison students. Promising approaches were those that provided targeted reading intervention in comprehension, multiple reading components, or word-recognition strategies" (p.392).

Vaughn, S., Wexler, J., Roberts, G., Barth, A.A., Cirino, P.T., Romain, M.A., Francis, D., Fletcher, J., & Denton, C.A. (2011). Effects of individualized and standardized interventions on middle school students with reading disabilities. *Exceptional Children, 77*(4), 391-407.

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"Elbaum, Vaughn, Hughes, and Moody's (2000) meta-analysis provides support for the view that benefits of small group instruction are equal to one-to-one tutoring in elementary reading instruction. Several studies showed that when highly qualified teachers rigorously implement a well-designed intervention, the academic benefit to students is the same, whether students are taught individually or in a group of 2 to 6 students. Conversely, a recent synthesis of evidence-based studies with struggling readers indicates that, although small group tutorials can be effective, they are not as effective as one-to-one instruction by teachers or paraprofessionals (Slavin, Lake, Davis, &Madden, 2009). Further, Ritter, Barnett, Denny, and Albin's (2009) meta-analysis found elementary and middle school volunteer tutoring programs compared to no tutoring had significant positive effects on reading letters and words, oral reading fluency, writing, and reading in general" (p.220).
Mellard, D., McKnight, M., & Jordan, J. (2010). RTI tier structures and instructional intensity. *Learning Disabilities Research & Practice, 25*(4), 217–225.

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The large majority of neuroimaging studies investigating the neurobiological correlates of poor reading have concentrated on lower-level reading tasks involving letters and words. One of the most consistent

results in these studies is a finding of reduced or absent activation among poor readers in the left parieto-temporal and/or occipito-temporal cortices (e.g. Aylward et al., 2003; Brunswick, McCroy, Price, Frith, & Frith, 1999; [Corina et al., 2001], [Eden et al., 2004], [Georgiewa et al., 1999], [Hoeft et al., 2006], [Hoeft et al., 2007], [Paulesu et al., 1996], [Rumsey et al., 1992], [Rumsey et al., 1997], [Shaywitz et al., 1998], [Shaywitz et al., 2002], [Shaywitz et al., 2003] and [Shaywitz et al., 2004]; Simos, Breier, Fletcher, Bergman, & Papanicolaou, 2000; [Simos et al., 2002] and [Temple et al., 2003]). While only a few studies have examined cortical function among poor readers in higher-level reading tasks, evidence is beginning to emerge indicating that underactivation in the parieto-temporal and occipito-temporal regions may likewise characterize poor readers when they are reading sentences for comprehension (e.g. [Kronbichler et al., 2006], [Meyler et al., 2007] and [Seki et al., 2001]). Together, the findings from word-level and sentence-level studies support the view that underfunctioning of these regions represents a neural signature of poor reading ability (e.g. Shaywitz & Shaywitz, 2005).

Meyler, A., Keller, T.A., Cherkassky, V.L., Gabrieli, J.D., & Just, M.A. (2008) Modifying the brain activation of poor readers during sentence comprehension with extended remedial instruction: A longitudinal study of neuroplasticity. *Neuropsychologia, 46*(10), 2580-92.

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"Strong claims that a given program is brain-based are premature at best" (p.22).
Pugh, K., & Hagan, E.C. (2010). New directions in the cognitive neuroscience of reading development and reading disability. *Perspectives on Language and Literacy; 36*(1), 22.

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Howard-Jones (in the February 2011 issue of The Psychologist, the journal of the British Psychological Society) reports a survey of a sample of 158 recently-graduated UK teacher trainees who were about to take up their first teaching positions in schools. This survey found that:

• 82 per cent considered teaching children in their preferred learning style could improve learning outcomes. This approach is commonly justified in terms of brain function, despite educational and scientific evidence demonstrating the learning-style approach is not helpful (Kratzig & Arbuthnott 2006).

• 65 per cent of trainees considered that coordination exercises could improve integration of left–right hemispheric function. No neuroscientist would think this makes any sense.

• 20 per cent thought their brain would shrink if they drank less than six to eight glasses of water a day.

This parallels a study of new teachers in Australia, carried out by Ruth Fielding-Barnsley. See http://eprints.qut.edu.au/1940/1/1940.pdf published in 2005.

• More than 75% were unable to correctly count the number of sounds in a word spoken to them. • Few knew what was meant by the terms "syllable" or "diphthong" or "voiced consonant"

As far as I can see, neither in the UK nor in Australia have there been any changes in teacher-training syllabi as a consequence of any of the working parties/reports, including the Rose Report. Teaching children to correctly count the number of sounds in a word spoken to them is regarded by most as relevant to phonics. How can this happen in schools when the teachers themselves can't do it?

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Student Support Group Guidelines 2012 DEECD
**Identifying the most appropriate learning style** It is most important to identify the student's preferred learning styles and rates of learning. All students have preferences in the way in which they interpret information, make connections between learning and demonstrate that learning. Major differences in learning styles include learning by experimenting, reflecting, doing or feeling, and learning individually or within a group. Enabling students to be involved in learning tasks in ways which are most comfortable for them, and which give them the opportunity to face challenges, will enhance the quality of their learning

and ultimately the outcomes they will achieve (p.7).
http://www.eduweb.vic.gov.au/edulibrary/public/stuman/wellbeing/SSG_Guidelines_2012.pdf

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"Some of the biggest teaching schools are accepting entry-level students with TER scores so low as to be equivalent to failure in other states" (p.7).

Senate Employment, Workplace Relations and Education Committee. (2007). *Quality of school education.* Commonwealth of Australia. Retrieved May 14, 2010, from http://www.aph.gov.au/SEnate/committee/eet_ctte/completed_inquiries/2004-07/academic_standards/index.htm

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| TRAINING COMPONENTS | OUTCOMES % of Participants who Demonstrate Knowledge, Demonstrate New Skills in a Training Setting, and Use New Skills in the Classroom | | |
| --- | --- | --- | --- |
| | Knowledge | Skill Demonstration | Use in the Classroom |
| Theory and Discussion | 10% | 5% | 0% |
| ...+Demonstration in Training | 30% | 20% | 0% |
| ...+ Practice & Feedback in Training | 60% | 60% | 5% |
| ...+ Coaching in Classroom | 95% | 95% | 95% |

*Mellard, D. (2009, June). Response to intervention: Reforms to meet the needs of all students.* Presented at the Supporting Student Learning Conference, Indianapolis , *IN* .

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"Students who are behind do not learn more in the same amount of time as students who are ahead. Catch-up growth is driven by proportional increases in direct instructional time. Catch-up growth is so difficult to achieve that it can be the product only of quality instruction in great quantity" (p. 62).
Fielding, L., Kerr, N., & Rosier, P. (2007). *Annual growth for all students, Catch-up growth for those who are behind.* Kennewick, WA: The New Foundation Press, Inc.

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Mellard (2009) suggests that schools evaluate 10 distinct variables that may be adjusted to increase instructional intensity. These variables include three dosage-related elements (minutes of instruction, frequency, and duration), as well as instructional group size, immediacy of corrective feedback, the mastery requirements of the content, the number of response opportunities, the number of transitions among contents or classes, the specificity and focus of curricular goals, and instructor specialty and skills.
Mellard, D., McKnight, M., & Jordan, J. (2010). RTI tier structures and instructional intensity. *Learning Disabilities Research & Practice, 25*(4), 217–225.

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"The authors examine the reassessments of the National Reading Panel (NRP) report (National Institute of Child Health and Human Development, 2000) by G. Camilli, S. Vargas, and M. Yurecko (2003); G. Camilli, P. M. Wolfe, and M. L. Smith (2006); and D. D. Hammill and H. L. Swanson (2006) that disagreed with the NRP on the magnitude of the effect of systematic phonics instruction. Using the coding of the NRP studies by Camilli et al. (2003, 2006), multilevel regression analyses show that their findings do not contradict the NRP findings of effect sizes in the small to moderate range favoring systematic phonics. Extending Camilli et al. (2003, 2006), the largest effects are associated with reading instruction enhanced with components that increase comprehensiveness and intensity. In contrast to Hammill and Swanson, binomial effect size displays show that effect sizes of the magnitude found for systematic phonics by the NRP are meaningful and could result in significant improvement for many students depending on the base rate of struggling readers and the size of the effect. Camilli et al. (2003, 2006) and Hammill and Swanson do not contradict the NRP report, concurring in supporting comprehensive approaches to reading instruction" (p. 123).

Stuebing, K.K., Barth, A.E., Cirino, P.T., Francis, D.J, & Fletcher, J.M. (2008). A response to recent reanalyses of the National Reading Panel report: Effects of systematic phonics instruction are practically significant. *Journal of Educational Psychology, 100*(1), 123-134.

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The gain in reading during a chronological time span, expressed as a ratio of that time span
- A ratio gain of 1.0 is exactly standard progress
- Brooks (2002) set a ratio gain of 1.4 as 'educationally significant'
- By 2007, Brooks stated that a ratio gain of 2.0 should be expected as '*many schemes now produce impacts of this order or more*' (p30)

Note, it is easier to achieve high ratio gains over a short period of intervention, than over a longer period
www.ilsa.ie/PowerPoint/Nugent%20Mary%20ILSA%202011.ppt

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"Writing practices cannot take the place of effective reading practices (see Biancarosa and Snow [2004] and NICHD [2000] for a review of such practices). Instead, writing practices complement reading practices and should always be used in conjunction, with each type of practice supporting and strengthening the other.

This study shows that students' reading abilities are improved by writing about texts they have read; by receiving explicit instruction in spelling, in writing sentences, in writing paragraphs, in text structure, and in the basic processes of composition; and by increasing how much and how frequently they write. Our evidence shows that these writing activities improved students' comprehension of text over and above the improvements gained from traditional reading activities such as reading text, reading and rereading text, reading and discussing text, and receiving explicit reading instruction.

The empirical evidence that the writing practices described in this report strengthen reading skills provides additional support for the notion that writing should be taught and emphasized as an integral part of the school curriculum. Previous research has found that teaching the same writing process and skills improved the quality of students' writing (Graham and Perin, 2007a; see also Graham, in press; Rogers and Graham, 2008) and learning of content (as demonstrated in Graham and Perin [2007a] and Bangert-Drowns, Hurley, and Wilkinson [2004]). Students who do not develop strong writing skills may not be able to take full advantage of the power of writing as a tool to strengthen reading" (p.29).

Graham, S., & Hebert, M. A. (2010). *Writing to read: Evidence for how writing can improve reading*. A Carnegie Corporation Time to Act Report. Washington, DC: Alliance for Excellent Education. http://carnegie.org/fileadmin/Media/Publications/WritingToRead_01.pdf

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"At the level of brain systems, relative to typically developing (TD) readers, RD children and adolescents fail to coherently activate left hemisphere (LH) occipitotemporal (OT) and temporoparietal (TP) regions during reading" (p.22).

Pugh, K., Hagan, & E.C. (2010). New directions in the cognitive neuroscience of reading development and reading disability. *Perspectives on Language and Literacy, 36*(1), 22-25.

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Viewed broadly, Australia's standing in international assessments has fallen over time. (As one illustration of this, table 4 shows that the decline in Australia's PISA results for reading and mathematics has been larger over the last decade than for the OECD as a whole.) This is despite a steady *increase* in per capita spending on education (p.8).

Australian Government Productivity Commission. (2011). Issues paper - Education and Training Workforce: Schools Workforce Study. www.pc.gov.au/__data/assets/word.../schools-workforce-issues.doc

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International research suggests that differences in teacher performance can explain a large portion of student achievement. Yet little is known about how the quality of the Australian teaching profession has changed over time. Using consistent data on the academic aptitude of new teachers, we compare those who have entered the teaching profession in Australia over the past two decades. We find that the aptitude of new teachers has fallen considerably. Between 1983 and 2003, the average percentile rank of those

entering teacher education fell from 74 to 61, while the average rank of new teachers fell from 70 to 62. One factor that seems to have changed substantially over this period is average teacher pay. Compared to non-teachers with a degree, average teacher pay fell substantially over the period 1983-2003. Another factor is pay dispersion in alternative occupations. During the 1980s and 1990s, non-teacher earnings at the top of the distribution rose faster than earnings at the middle and bottom of the distribution. For an individual with the potential to earn a wage at the 90th percentile of the distribution, a non-teaching occupation looked much more attractive in the 2000s than it did in the 1980s. We believe that both the fall in average teacher pay, and the rise in pay differentials in non-teaching occupations are responsible for the decline in the academic aptitude of new teachers over the past two decades (p. 1).

Leigh, A., & Ryan, C. (2006). How and why has teacher quality changed in Australia? *Centre for Economic Policy Research Paper No. 534* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=961142

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"As the number of low-skilled jobs in the employment market decreases, the importance of trade and higher education qualifications increases. Students who fail to complete Year 12 have fewer employment opportunities and are more likely to experience extended periods of unemployment than Year 12 graduates (Lamb et al. 2000). In May 2005, 20% of school leavers who had completed Year 12 were not fully participating in either study or work compared with 40% of Year 11 completers and nearly 50% of Year 10 or below completers (Dusseldorp Skills Forum & Monash University–ACER 2006)" (p.45).

Australian Institute of Health and Welfare (2007). *Young Australians: Their health and well-being, 2007.* Downloaded from: http://www.aihw.gov.au/publication-detail/?id=6442468047 on 4th March, 2010.

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*The Australian Education Union's New Educators Survey 2008 found that 41.2 per cent of beginning teachers considered their pre-service teacher education to prepare them 'well' or 'very well' for the reality of teaching. **Australian Graduate Survey 2009

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"Findings also indicate that a significant acceleration of reading outcomes for seventh- and eighth-graders from high-poverty schools is unlikely to result from a 50 min daily class. Instead, the findings indicate, achieving this outcome will require more comprehensive models including more extensive intervention (e.g., more time, even smaller groups), interventions that are longer in duration (multiple years), and interventions that vary in emphasis based on specific students' needs (e.g., increased focus on comprehension or word study)" (p. 931).

Vaughn, S., Wanzek, J., Wexler, J., Barth, A.E., Cirino, P.T., Fletcher, J.M., Romain, M.A., Denton, C.A., Roberts, G., & Francis, D.J. (2010). The relative effects of group size of reading progress of older students with reading difficulties. *Reading and Writing: An Interdisciplinary Journal, 23*(8), 931-956.

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Studies of the use of Direct Instruction materials and procedures have shown that general language can be improved among mentally retarded pupils (e.g., Maggs & Morath, 1976), as well as disadvantaged children eligible for Head Start (e.g., Engelmann, 1968) and those in Follow- Through (Becker, 1977) (p.70).

Lloyd, J., Cullinan, D., Heins, E.D., & Epstein, M.H. (1980). Direct instruction: Effects on oral and written language comprehension. *Learning Disabilities Quarterly*, *3*, 70-76.

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''Direct instructional time is proportional to their [children's] deficiency. The greater the need, the more time they get.'' Further, they caution that ''catch up growth'' requires more time and better quality instruction. Ikeda and colleagues cautioned that in most schools within the Iowa Heartland district, ''interventions were not sufficiently rigorous to impact reading performance'' (p.20).

Al-Otaiba, S., Calhoon, M. B., & Wanzek. J. (2010). Response to intervention: Treatment validity and implementation challenges in the primary grades and beyond to middle school. In Thomas E. Scruggs, Margo A. Mastropieri (Eds.). Advances in learning and behavioral disabilities, Volume 23; Learning and Literacy. Emerald Publishing.

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232. A key problem in assessing the impact of targeted programs for disadvantaged groups is the absence of any formal evaluation for many of these programs. This weakness is present across all school sectors

and systems, and all states and territories. … over 40 per cent of programs did not record any evaluation having been undertaken.

Submissions noted that almost every report on the issue of inclusive education in Australia has stressed the need for systematic strengthening of teacher education and professional development. Skills development is the single most cost-effective method of improving outcomes for students with disabilities, and yet this area continues to be neglected (NPDCC 2009, p. 49-50).

254. Re students from disadvantaged groups, learning disabilities, indigenous, ESL, low SES, remote areas. *Weak monitoring and reporting* inhibits the capacity of school systems to build sector knowledge of the relevance and context of improvement strategies that have demonstrated effectiveness. This means there is a lack of evidence-based links for programs and their effects on learning (254).
Rorris, A., Weldon, P., Beavis, A., McKenzie, P., Bramich, M., & Deery, A. (2011). *Assessment of current process for targeting of schools funding to disadvantaged students*. An Australian Council for Educational Research report prepared for The Review of Funding for Schooling Panel.
http://www.deewr.gov.au/Schooling/ReviewofFunding/Pages/PaperCommissionedResearch.aspx

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Australian student's performance in reading and mathematics has been falling since 2000. It should have improved given the increased investment in education. Other countries have improved significantly over the same period.
Nous Group Consortium. (2011). *Schooling challenges and opportunities: A report for the Review of Funding for Schooling Panel*. Nous Group Consortium, August 29.
http://www.deewr.gov.au/Schooling/ReviewofFunding/Pages/PaperCommissionedResearch.aspx

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A long history of research on teaching suggests that effective teachers may be better at capturing more time for academic instruction and keeping students focused on their tasks than less effective teachers. Effective teachers may have more efficient routines for transitions between activities, and better classroom management that result in more time for instruction.
Grossman, P.L., Loeb, S., Cohen, J., Hammerness, K., Wyckoff, J.H., Boyd, D.J., & Lankford, H. (2010). Measure for measure: The relationship between measures of instructional practice in middle school English language arts and teachers' value-added score. Working Paper 45, National Center for Analysis of Longitudinal Data in Education research. Retrieved from
http://www.caldercenter.org/upload/CALDERWorkPaper_45.pdf

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Al Otaiba and colleagues examined the predictors of early spelling. This study involved an economically and ethnically diverse sample of nearly 300 kindergarteners. The students spelled three types of words: irregular high-frequency words, decodable real words, and decodable pseudowords. Overall, results from their three-step hierarchical regression indicated that home literacy, parental education, demographic factors, and conventional literacy skills, accounted for 66% of the variance in spelling scores. The single strongest spring predictor was a **one minute letter-sound fluency test**. Researchers scored the spellings to allow partial credit for invented spelling, which made the test more sensitive to differences and less susceptible to floor effects, which is important for poor spellers and potentially for students with reading disabilities.
Al Otaiba, S., Puranik, C., Rouby, D.A., Greulich, L., Sidler, J.F., & Lee, J. (2010). Predicting kindergarteners' end-of-year spelling ability based on their reading, alphabetic, vocabulary, and phonological awareness skills. *Learning Disability Quarterly, 33*(3), 171-183.

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"Over the last decade, research has revealed that many elementary students with mild academic disabilities (mostly students with LD) can make significant academic gains when provided high-quality instruction in part-time, **separate settings** (Foorman & Torgesen, 2001; Gersten et al, 2009a, b; Holloway, 2001; Marston, 1996, 2001; Torgesen, 2002; Torgesen et al., 2001; Vellutino, Scanlon, Small, & Fanuele,

2006). Furthermore, these gains are often significantly greater than gains that are experienced by most students with similar difficulties who are educated in high-quality, full-time **inclusive settings** (Marston, 2001; McLeskey &Waldron, 2010; Torgesen et al., 2001; Torgesen, 2009; Vellutino, Scanlon, Small, & Fanuele, 2006; Waldron & McLeskey, 1998). Perhaps most importantly, this research reveals that, for as many as 40–50 percent of these students, significant academic gains result in catching up with grade-level peers (Torgesen et al., 2001; Torgesen, 2009; Vellutino et al., 2006)" (p.49).

McLeskey, J., & Waldron, N.L. (2011). Educational programs for elementary students with learning disabilities: Can they be both effective and inclusive? *Learning Disabilities Research & Practice*, *26*(1), 48–57.

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"The authors used a pretest-posttest control group design with random assignment to evaluate whether early reading failure decreases children's motivation to practice reading. First, they investigated whether 60 first-grade children would report substantially different levels of interest in reading as a function of their relative success or failure in learning to read. Second, they evaluated whether increasing the word reading ability of 15 at-risk children would lead to gains in their motivation to read. Multivariate analyses of variance suggest marked differences in both motivation and reading practice between skilled and unskilled readers. However, bolstering at-risk children's word reading ability did not yield evidence of a causal relationship between early reading failure and decreased motivation to engage in reading activities. Instead, hierarchical regression analyses indicate a covarying relationship among early reading failure, poor motivation, and avoidance of reading" (p.387).

Morgan, P.L. (2008). Does early reading failure decrease children's reading motivation? *Journal of Learning Disabilities, 41*(5), 387-404

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"This article presents the results of a meta-analysis of the empirical literature on anxious symptomatology among school-aged students with learning disabilities (LD) in comparison to their non-LD peers. Fifty-eight studies met inclusion criteria. Results indicate that students with LD had higher mean scores on measures of anxiety than did non-LD students. The overall effect size was statistically significant and medium in magnitude ($d = .61$) although substantial heterogeneity of results was found. Moderator effects were examined for informant type, gender, grade, publication status, and identification source. Informant type (i.e., self-, parent, or teacher report) explained a significant amount of variability in the sample of studies, and identification source (i.e., school identified or special school and clinic/hospital identified) approached statistical significance. Implications for assessment and intervention are discussed" (p.3).

Nelson, J.M., & Harwood, H. (2011). Learning disabilities and anxiety: A meta-analysis. *Journal of Learning Disabilities*, *44*(1), 3-17.

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"In summary, this study suggests that regardless of the variations in measures of the same construct across studies, variations in how RTI was implemented in terms of curriculum, length of intervention session, and how responders and low responders are defined, a clear pattern emerged suggesting that low responders can be identified prior to intervention. The key measures that play an important role in predicting posttest outcomes are related to initial level of real word reading, word attack, passage comprehension and rapid naming speed" (p.293).

Tran, L., Sanchez, T., Arellano, B., & Swanson, H.L. (2011). A meta-analysis of the RTI literature for children at risk for reading disabilities. *Journal of Learning Disabilities, 44*(3), 283-295.

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The single strongest spring predictor of kindergarteners' end-of-year spelling ability is a 1-minute letter-sound fluency test.

Al Otaiba, S., Puranik, C.S., Rouby, D.A., Greulich, L., Sidler, J.F., Lee, J. (2010). Predicting kindergarteners' end-of-year spelling ability based on their reading, alphabetic, *Learning Disability Quarterly,* 33(3), 171-183.

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Results showed that the Double Deficit group exhibited greater dysfunction in reading and orthographic processing compared to the single-deficit and no deficit groups. Also, although the three deficit groups were not easily differentiated in kindergarten, their differences were maximized in Grade 1 and retained in Grade 2. The type and severity of reading deficits found in the Naming Deficit group were mostly associated with naming speed at both the word- and text-reading levels, deficits that persisted across development. The Phonological Deficit group showed mostly deficient orthographic and poor decoding skills that improved across development.

Papadopoulos, T.C., Georgiou, G.K., & Kendeou, P. (2009). Investigating the double-deficit hypothesis in Greek: Findings from a longitudinal study. *Journal of Learning Disabilities 42*(6), 528-547.

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The correlations between oral reading fluency and performance on comprehension tests are high (Allinder, Fuchs, & Fuchs, 1998; Jenkins, Fuchs, van den Broek, Espin, & Deno, 2003; O'Connor et al., 2002; Pinnel et al., 1995; Rupley, Willson, & Nichols, 1998).

Swanson, H.L., & O'Connor, R. (2009). The role of working memory and fluency practice on the reading comprehension of students who are dysfluent readers. *Journal of Learning Disabilities, 42*(6), 548-557.

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Using assessments that are similar to those used with children, literacy skills can be measured in adults. In addition, these measures are reliable and identify differences in reading proficiency in different segments of the adult literacy population.

Fletcher, J. (2010). Construct validity of reading measures in adults with significant reading difficulties. *Journal of Learning Disabilities, 43*(2), 166-168.

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"Inclusion, as a philosophy, is consistent with the values of most school systems, but it is not, in and of itself, a means to close the achievement gap.... [All 38 studies] focused on **social acceptance and peer interactions.** This bias in academic research reveals a broader bias in the conventional thinking regarding inclusion: deep down, we have embraced it for social gains, not for learning gains" p.7).

"National research indicates that co-teaching seldom raises student achievement... no studies have shown student gains from co-teaching, and that on average, co-teaching actually produces less learning than a class with a single teacher" (p.9).

Levenson, N. (2011). *Something has got to change: Rethinking special education.* Future of American Education Working Paper Series. http://www.aei.org/docLib/AEI-Working-Paper-Rethinking-Special-Education.pdf

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"One of my children learnt to read from cook books, because he loved cooking. … Reading is just like footy or cricket or golf. You learn by doing it"

Children's author, Paul Jennings interviewed in Cafarella, J. (2011). *Bringing books to life*. The Victorian Premiers' (sic) Reading Challenge. The Age, Sunday June 19.

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Goodman et al. (1987) consider that semantic cues are deep structure processes, while grapho-phonic cues are surface structure processes. Smith (2004) explains that deep structure processes involve knowledge and meaning, while surface structure processes are the physical characteristics of text such as the visual and sound properties. Goodman et al. (1987) put the most emphasis on semantic followed by syntactic cues in the reading process. They suggested that grapho-phonic cues are utilised only when the former systems are unavailable. Whole-language advocates believe that skilled readers are more likely to depend on meaning and grammatical cues and are less likely to use grapho-phonic cues than are less skilled readers (Stanovich, 2000). Goodman (1979) claimed that the semantic acceptability of a reader's miscues prior to correction is the greatest predictor of reading ability. Consequently a focus on meaning is expected to lead to skilled reading (Robinson & McKenna, 2008).

Beatty, L., & Care, E. (2009). Learning from their miscues: Differences across reading ability and text difficulty. *Australian Journal of Language and Literacy,* Oct 2009.
http://findarticles.com/p/articles/mi_hb3336/is_3_32/ai_n45180004/

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1. The dominant factor in explaining individual differences in performance on the FCAT in grade 3 is oral reading fluency

2. The dominant factor in explaining individual differences in performance on the FCAT in grade 10 is verbal knowledge and reasoning ability
Schatschneider , C., Buck, J., Torgesen, J.K., Wagner, R.K., Hassler, L., Hecht, S., & Powell Smith, K. (2005). A multivariate study of factors that contribute to individual differences in performance on the Florida Comprehensive Reading Assessment Test. Technical Report # 5, Florida Center for Reading Research, Tallahassee, FL.
http://www.fcrr.org/technicalreports/multi_variate_study_december2004.pdf

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Almost half of all Australians aged 15-74 years had literacy skills *below level 3*.

Level 1 - trouble using a bus timetable or completing basic forms. May be able to locate some information on a medicine label; however, skill level 1 includes people who could not complete such tasks.

Level 2 - may be able to complete the above, but may not be able to interpret a weather map or summarise a piece of text.

Level 3 - may not be able to compare and contrast written information, extract information from a pamphlet or interpret pie charts. Considered minimum for 'coping with the increasing demands of the emerging knowledge society and information economy'.
Australian Bureau of Statistics. (2008). *Adult Literacy and Life Skills Survey (ALLS 2006-2007).* Retrieved July 29, 2008, from http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Chapter6102008

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"When students with borderline intellectual functioning begin school, academic motivation is rarely a problem (Hihi & Harachiewicz, 2000). However, as they get older, a consistent pattern emerges. Strong effort in the early grades is met with academic frustration and possible failure. Despite the students' efforts, this cycle of academic frustration and failure is repeated. After some years, the cumulative effect of frustration and failure is that students simply stop trying (Guay & Vallerand, 1996-1997). In the classroom, such students are referred to as unmotivated and, sometimes, as lazy. Academic motivation may have some temperamental and early environmental factors that place a child at risk for motivation deficits (Levine, 2003). However, academic motivation and effort are often extinguished by repeated failure and frustration (Levine, 2003)".

Shaw, S. R. (2008). An educational programming framework for a subset of students with diverse learning needs: Borderline intellectual functioning. *Intervention in School and Clinic, 43*, 291-299.

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Because dyslexia is a language-based disorder, treatment should be directed at this etiology. Remedial programs should include specific instruction in decoding, fluency training, vocabulary, and comprehension. Most programs include daily intensive individualized instruction that explicitly teaches phonemic awareness and the application of **phonics**. Vision problems can interfere with the process of reading, but children with dyslexia or related learning disabilities have the same visual function and ocular health as children without such conditions. Currently, there is inadequate scientific evidence to support the view that subtle eye or visual problems cause or increase the severity of learning disabilities.
Handler, S.M., & Fierson, W.M (2011). Joint technical report-Learning disabilities, dyslexia, and vision. *Pediatrics 127*(3), 818-856.

There is no single line of accountability for the success of Wannik. Despite identifying the Wannik strategy as a departmental priority project, DEECD has implemented it using a business-as-usual approach.

There are no reporting mechanisms that provide a picture of the overall status of the Wannik strategy. There is insufficient information with which to identify and address any implementation problems.

DEECD is more than two years late putting in place a monitoring and evaluation framework that allows it to reliably and objectively assess progress, and measure the strategy's success in achieving outcomes.

DEECD was unable to provide reliable data about critical factors such as the workforce profile, skills and capabilities, workforce turnover and the extent of professional development provided to staff.

VAEAI has not fulfilled its service obligations and reporting requirements in the agreement, and DEECD has not held it to account for this.

The Koorie education workforce has inconsistent skills, and until it is properly trained it does not have the capacity to perform the required activities. DEECD is 12 months behind schedule in providing the planned professional learning to the Koorie education workforce and does not expect to have a statewide professional development plan until February 2012.

Victorian Auditor-General (2011). Indigenous Education Strategies for Government Schools. *download.audit.vic.gov.au/files/20110601-Indigenous-Ed.rtf*

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"Consistent with previous reviews of similar focus, the findings suggest that education technology generally produced a positive, though small, effect (ES=+0.16) in comparison to traditional methods. However, the effects may vary by education technology type. In particular, **the types of supplementary computer-assisted instruction programs that have dominated the classroom use of education technology in the past few decades are not producing educationally meaningful effects in reading for K-12 students.** In contrast, innovative technology applications and integrated literacy interventions with the support of extensive professional development showed somewhat promising evidence. However, too few randomized studies for these promising approaches are available at this point for firm conclusions".

Cheung, A., & Slavin, R.E. (2011, May). *The effectiveness of education technology for enhancing reading achievement: A meta-analysis*. Baltimore, MD: Johns Hopkins University, Center for Research and Reform in Education.

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"**Students with borderline intellectual functioning are a subset of diverse learners who account for disproportionately high levels of school dropout, grade retention, school suspension and expulsion, referral for special education services, teen pregnancy, incarceration, illicit drug use, aggression, mental health problems, and underemployment and unemployment** (Ahrens, Evans, & Barnett, 1990; Shaw, 1999a; 1999b)". … "When students with borderline intellectual functioning begin school, academic motivation is rarely a problem (Hihi & Harachiewicz, 2000). However, as they get older, a consistent pattern emerges. Strong effort in the early grades is met with academic frustration and possible failure. Despite the students' efforts, this cycle of academic frustration and failure is repeated. After some years, the cumulative effect of frustration and failure is that students simply stop trying (Guay & Vallerand, 1996-1997). In the classroom, such students are referred to as unmotivated and, sometimes, as lazy. Academic motivation may have some temperamental and early environmental factors that place a child at risk for motivation deficits (Levine, 2003). However, academic motivation and effort are often extinguished by repeated failure and frustration (Levine, 2003)" (p.291).

Shaw, S. R. (2008). An educational programming framework for a subset of students with diverse learning needs: Borderline intellectual functioning. *Intervention in School and Clinic, 43*, 291-299.

"Perhaps the most important distinction among tiers is the intensity of instruction associated with each tier. Instructional intensity, while a term that is commonly understood by educators, merits some discussion in the RTI context. Often educators view increased intensity as something that can be accomplished "primarily by increasing instructional time or reducing size of the instructional group, or doing both" (Torgesen, 2005, p. 3). Mellard (2009) suggests that schools evaluate 10 distinct variables that may be adjusted to increase instructional intensity. These variables include three dosage-related elements (minutes of instruction, frequency, and duration), as well as instructional group size, immediacy of corrective feedback, the mastery requirements of the content, the number of response opportunities, the number of transitions among contents or classes, the specificity and focus of curricular goals, and instructor specialty and skills".
Mellard, D., McKnight, M., & Jordan, J. (2010). RTI tier structures and instructional intensity. *Learning Disabilities Research & Practice, 25*(4), 217–225.

"We highlight results from a series of hierarchical multiple regression analyses which show that: (1) IQ is not highly correlated with reading achievement, (2) IQ does not predict response to intervention, and (3) measures of response to intervention are better predictors of long-term risk status than IQ. As such, the current article is a position paper summarizing results from two extant datasets to support our view that RTI is a more valid approach to identification of SLD than is the more traditional psychometric approach that uses the IQ-achievement discrepancy as its central defining criterion".
Gresham, F.M., & Vellutino, F.R. (2010). What is the role of intelligence in the identification of specific learning disabilities? Issues and clarifications. *Learning Disabilities Research & Practice. 25*(4), 194–206.

"Predictable text has become widely used for beginning readers but has not been the subject of much research. This study used predictable books to compare 3 reading treatments reflecting different components of a whole-to-part instructional model. In 3 first-grade classrooms, beginning readers working with isolated words in a modified word bank activity learned more words than when they worked with sentence strips. They also learned more words using sentence strips than when they simply read and reread the books. There was a significant treatment effect, justifying the theoretical position that **beginning readers learn more words when those words are removed from the supportive context** offered by predictable text. Students with higher levels of literacy skill learned 5 times as many words as those with lower levels. The overall number of words learned in these predictable books appears limited. These findings have important implications for the use of texts in beginning reading programs".
Johnston, F. R. (2000). Word learning in predictable text. *Journal of Educational Psychology, 92*(2), 248-255.

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"If some notion of the failure to respond to high quality, evidence-based instruction and intervention is not explicitly built into the definition of dyslexia (irrespective of whether or not RTI turns out to be the most feasible approach), it will not be possible to distinguish between poor readers who did not receive adequate instruction and those who are genuinely dyslexic. This is certainly a very real possibility in a country like New Zealand, which for the past two decades has strongly adhered to a constructivist, whole language approach to reading instruction that places heavy emphasis on the use of multiple cues (especially sentence context cues) in learning to read (Tunmer et al., 2003, 2004, 2006; Tunmer et al., 2008; Tunmer & Prochnow, 2009). The advocacy group most responsible for the recent recognition of dyslexia in New Zealand claims that 10% of New Zealand schoolchildren are dyslexic (Dyslexia Foundation of New Zealand, 2008). Although international studies of reading achievement over the past 20 years have consistently shown that New Zealand does indeed have a relatively high proportion of reading failures compared with other countries (see earlier discussion), the majority of these children are most likely "teaching disabled" rather than reading disabled. … A considerable amount of research indicates that with very rare exceptions, students diagnosed with dyslexia have a history of deficits in one or more aspects of phonological processing, especially phonological awareness and phonological recoding (Snowling, 2000; Vellutino & Fletcher, 2005; Vellutino et al., 2004)".

"In summary, we have presented arguments and evidence in support of defining dyslexia in terms of four components: (a) persistent literacy learning difficulties (b) in otherwise typically developing children (c) despite exposure to high quality, evidence-based literacy instruction and intervention, (d) due to an impairment in the phonological processing skills required to learn to read and write. In defining dyslexia in this manner, we are not suggesting that children diagnosed as having dyslexia cannot make progress in learning to read. Rather, our claim is that these children require more intensive instruction of longer duration of the kind provided in the third tier of RTI models".

Tunmer, W., &Greaney, K. (2010). Defining dyslexia. *Journal of Learning Disabilities, 43*(3), 229–243.

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On average, when the Corrective Reading program was coupled with repeated reading lessons, findings reflected a large effect (*M ES* = 1.52) for students with disabilities (i.e., Gregory et al., 2005; Strong et al., 2004). In these two investigations, essentially, all students improved on their reading fluency, and results were varied with regard to performance on answering comprehension questions. … Although more research comparing whole-word to phonic instruction is needed with adolescent populations, one study suggested that adolescents who were taught phonic analysis skills were better able to transfer their skills when they encountered words that were novel to them (*ES* = 1.30 on pseudoword reading), contrary to those adolescents who received either whole-word reading skills or no specialized instruction (i.e., Bhattacharya & Ehri, 2004)".

"Students who have not acquired some degree of reading decoding and fluency skills by middle school are at a disadvantage, as they are increasingly expected to extract and synthesize information from content area texts (Biancarosa & Snow, 2004; Santa, 2006). Moreover, "students who lack sufficient fluency entering into the middle grades are not likely to find much instructional support for their difficulties" (Rasinksi et al., 2005, p. 26)"

Joseph, L. M., & Schisler, R. (2009). Should adolescents go back to the basics?: A review of teaching word reading skills to middle and high school students RASE TL & LD. *Remedial and Special Education, 30*(3), 131. Retrieved from http://search.proquest.com/docview/236328142?accountid=13552

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The difficulties experienced by below-average readers in phonological decoding tasks are well documented. Recent research has suggested that additional deficits in perceptual–motor fluency, handedness, and memory may also exist among below-average readers. To evaluate these claims, average and below-average readers and spellers were compared on a range of phonological processing, verbal short-term and working memory, rapid naming, handedness, and perceptual–motor fluency tasks. Average and below-average readers were sampled in a comparable manner and were also comparable on age, gender, nonverbal ability, socioeconomic status, and ethnicity. **Below-average readers and spellers performed lower than average readers and spellers on rhyme detection, pseudoword decoding, and rapid digit (but not picture) naming tasks, but showed no differences in handedness tasks or on a range of other perceptual–motor tasks.**

Savage, R.S., & Frederickson, N. (2006). Beyond phonology: What else is needed to describe the problems of below-average readers and spellers? *Journal of Learning Disabilities, 39*(5), 399–413.

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We found that explicit, intensive, and highly structured reading instruction can increase the reading performance of incarcerated youth in a relatively short period of time. These findings are consistent with previous investigations of reading interventions with incarcerated youth (AlIen-DeBoer, Malmgren, & Glass, 2006; Drakeford, 2002; Malmgren & Leone, 2000).

Houchins, D. E., Jolivette, K., Krezmien, M. P., & Baltodano, H. M. (2008). A multi-state study examining the impact of explicit reading instruction with incarcerated students. *Journal of Correctional Education, 59*(1), 65-85. Retrieved from http://search.proquest.com/docview/229785905?accountid=13552

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Findings revealed special education beginning teachers were somewhat knowledgeable about teaching reading, but this knowledge did not contribute a significant portion of variance to classroom practice.

Practices in classroom management, decoding practices, and providing explicit, engaging instruction accounted for a significant portion of variance in student reading gains.

Brownell, M.T., Bishop, A.G., Gersten, R., Klingner, J.K., Penfield, R.D., Dimino, J., Haager, D., Menon, S., Sindelar, P.T, (2009). The role of domain expertise in beginning special education teacher quality. *Exceptional Children, 75*(4), 391-411.

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Student behaviour problems can be more a function of the school than of the individual student - "Misbehaving students are often reacting in a predictable and even sensible way to the school as it affects them, and as they have learned to perceive it and react to it" (p. 117).

Wayson, W. & Pinnell, G. (1982). Creating a living curriculum for teaching self-discipline. In D. Duke (Ed), *Helping teachers manage classrooms*. Vancouver: Assoc. for Supervision and Curriculum.

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It is concluded that regardless of the setting (regular or special classroom), the key to achievement gain by low-achieving students is maximizing the time that they spend being actively instructed or supervised by their teachers. The educational programs likely to be most effective with these students are programs developed on the basis of general principles of good instruction rather than programs designed from the beginning as responses to special needs or learning deficits diagnosed in compensatory education students.

Brophy, J. (1988). Research linking teacher behavior to student achievement: Potential Implications for instruction of Chapter 1 students. *Educational Psychologist, 23*(3), 235-286.

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The Government notes the Committee's point on the issues with a definition of Dyslexia. The Expert Advisory Group established by Sir Jim Rose in preparation of his independent report considered many published definitions of dyslexia. **They concluded that difficulties of a dyslexic nature can affect children across the range of intellectual abilities. This represents an important shift away from reliance on a discrepancy between measured IQ and measured attainment in reading and spelling once used to identify dyslexia. Evidence shows that, regardless of general level of ability, those with marked reading and spelling difficulties perform badly on tasks such as decoding, word recognition and phonological skills. Furthermore, measures of IQ do not predict how children will respond to literacy intervention or their long-term outcomes.**

Science and Technology Committee (2010). The Legacy Report: Government Response to the Committee's Ninth Report of Session 2009-10. House of Commons London: The Stationery Office Limited www.publications.parliament.uk/pa/cm201011/cmselect/cmsctech/.../370.pdf

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Meta-analyses consistently show positive effects of reducing instructional group size (Elbaum, Vaughn, Hughes, and Moody, 1999). Further, the intensive small group work must be frequent; in the studies my colleagues and I have reviewed, success has been produced when groups met 20 to 45 minutes per day, 4 to 5 days per week.

Torgesen, J. (2004, Fall). Preventing early reading failure. *American Educator*. Retrieved Nov 25, 2004, from http://www.aft.org/pubs-reports/american_educator/issues/fall04/reading.htm

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The first few years of elementary school are considered by many to be the most important for modifying the trajectory of children's reading development (see Pianta, Belsky, Vandergrift, Houts, & Morrison, 2008). Children who do not become competent readers during the first few years of school often will have difficulty in subsequent years (Torgesen & Burgess, 1998). For example, Juel (1988), in a longitudinal study of 54 low-income children, found a .88 probability that a child who was a poor reader at the end of first grade would remain such at the end of fourth grade. Similarly, Pianta et al. (2008) found that most of the change in reading trajectory in their longitudinal sample of children from 54 months to fifth grade took place by first grade with almost none taking place after third grade. Francis, Shaywitz, Stuebing, Shaywitz, and Fletcher (1996) found that 74% of children in the Connecticut Longitudinal Study who were poor readers in fourth grade continued to be poor readers in ninth grade.

Sonnenschein, S., Stapleton, L.M., Benson, A. (2010). The relation between the type and amount of instruction and growth in children's reading competencies. *American Educational Research Journal, 47*(2), 358–389.

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**One intervention was the use of text-comprehension strategies, such as the technique of looking back to an earlier paragraph or sentence to infer the meaning of what was not understood. A second approach focused on introducing children to new vocabulary and developing their listening comprehension,**
**The gains were largest for children who were taught using the second approach, and those gains could be entirely explained by an increase in their knowledge of vocabulary words and ability to understand them when spoken.**
Clarke, P.J. (2010). Ameliorating children's reading-comprehension difficulties: A randomized controlled trial. *Psychological Science,* 21,

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**There is a close relationship between reading and spelling (the correlation between the two is quite strong, ranging from 0.66 to 0.90. Contrary to the perception of English as a language with arbitrary spelling, nearly 50 percent of English words are predictable on sound-letter correspondences that can be taught, and another 34 percent of words are predictable except for one sound. Knowing these patterns makes spelling predictable.**
Joshi, R. M., Treiman, R., Carreker, S., & Moats, L. C. (2008). How words cast their spell. *American Educator, 8-18*, 42-43.

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**With regard to response to intervention (RTI), Vellutino, Scanlon, Zhang, and Schatschneider (2008) found in a multi-tiered, longitudinal intervention study that intelligence tests did not reliably distinguish between at-risk children who became independent readers with small-group intervention and those who did not, nor between children who attained grade-level expectations after receiving more intensive, individualized remedial assistance following the small-group intervention and those who did not attain grade-level expectations. However, language based cognitive measures and measures of incremental growth did distinguish between these groups of struggling readers. This finding and the finding that nondiscrepancy-defined (i.e., low IQ) poor readers and discrepancy-defined poor readers (i.e., those with IQs in the average to above average range) do not acquire reading skills in a fundamentally different manner suggest that IQ is largely irrelevant to defining dyslexia (Aaron, 1997), other than in applying exclusionary criteria concerning intellectual impairment.**
Tunmer, W., & Greaney, K. (2010). Defining dyslexia. *Journal of Learning Disabilities, 43*(3), 229–243.

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JUNE 24, 2010 **Is the learning disabilities epidemic waning?**

**Look at the trend in the number of students with learning disabilities in recent years. (And consider that before this time period, the percentage of kids with LD was going up, up, up). This is an 11 percent drop in just five years. We might be witnessing one of the great untold success stories of recent educational history. So why isn't anyone talking about this? And remind me again why Congress and the Administration decided to kill Reading First? - Mike Petrilli**

http://www.edexcellence.net/flypaper/index.php/2010/06/is-the-learning-disabilities-epidemic-waning/

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**"The program know as DI (or capital D, capital I) puts all of [the features of 'di'] into an explicit package. It's a more structured version of di that's been field tested. DI has taken the basic principles of di and applied them in explicit lessons to various aspects of curriculum at different levels. It includes programs to teach reading, math, and science. And because its lessons are written out ('scripted' or manualized), it's more consistent from teacher to teacher. DI has simple eaten the lunch of other instructional approaches in field tested and therefore is a best-practices example of the superiority of a scientifically based instruction program. And yet, ... it hasn't been declared by the federal government to be any better than the competition, much of which is unmitigated hogwash.!"**

Kauffman, J. M. (2010). *The tragicomedy of public education: Laughing and crying; thinking and fixing.* Verona, WS: Attainment. ISBN 1578616824

U.K. College of Optometrists major reviews of the literature on vision therapy in 2000 and 2008. **"The continued absence of rigorous scientific evidence to support behavioral management approaches, and the paucity of controlled trials in particular, represents a major challenge to the credibility of the theory and practice of behavioral optometry,"**

The American Academy of Pediatrics in 2009 reviewed 35 years of the literature on vision therapy condemned the therapy and its contention that it could help with learning disabilities. Visual problems, it claimed, are not the basis for learning disabilities. **"Ineffective, controversial methods of treatment such as vision therapy may give parents and teachers a false sense of security that a child's learning difficulties are being addressed, may waste family and/or school resources and may delay proper instruction or remediation."**

**House of Commons Science and Technology Committee Evidence Check 1: Early Literacy Interventions** http://www.publications.parliament.uk/pa/cm200910/cmselect/cmsctech/44/4402.htm This report on early literacy interventions is our first Evidence Check, a novel programme of work, launched in July 2009, that asks two questions of government: (1) what is the policy? and (2) on what evidence is the policy based?

We have discovered that the Government's focus on early literacy interventions and phonics-based teaching is based on the best available evidence. We have also found that the Government's use of Reading Recovery is based on evidence, but a lower quality of evidence than we, as a Science and Technology Committee, are comfortable with. The Government's decision to roll out Reading Recovery nationally to the exclusion of other kinds of literacy interventions was, however, not evidence-based, and we have suggested that the Government should commission some high quality research, such as randomised controlled trials, in this area.

We have identified the Government's approach to teaching children diagnosed with dyslexia to read— namely, a structured phonics-based programme—is evidence-based on the best available evidence. But we discovered that the evidence base could be much stronger in this area. The Government's focus on dyslexia, from a policy perspective, was led by pressure from the dyslexia lobby rather than the evidence, which is clear that educational interventions are the same for all poor readers, whether they have been diagnosed with dyslexia or not.

In broad conclusion, we found that there was a willingness from the Department to base its approach to early literacy interventions on the evidence. However, we discovered worryingly low expectations regarding the quality of evidence required to demonstrate the relative effectiveness and, in particular, the cost-effectiveness of different programmes.

**It has often been noted by methodologists and authors of systematic reviews of research that studies with small sample sizes tend to have much larger, positive effect sizes than do studies with larger sample sizes. … Much as an emphasis on randomized experiments in program evaluation syntheses is appropriate, there are other methodological factors that may be as important as random assignment, and need to be taken into account in the same way. Sample size is one of these factors.**
Slavin, R.E., & Smith, D. (2009). The relationship between sample sizes and effect sizes in systematic reviews in education. *Educational Evaluation and Policy Analysis, 31*(4), 500-506. http://www.bestevidence.org/methods/eff_sample_size.htm

**Hattie examines meta-analyses of research studies relating to student achievement, and concludes that Direct Instruction is highly effective. No other curricular program showed such consistently strong effects with students of different ability levels, of different ages, and with different subject matters.**

Hattie, J. A.C. (2009). Visible learning: A synthesis of over 800 meta-analyses relating to achievement. London and New York: Routledge.

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**In fact, the routine application of IQ tests for the classification of LD should not be supported because of the lack of evidence showing that IQ is necessary to identify LD and that IQ robustly predicts intervention response, prognosis, and school success (Fletcher et al., 2007).**
Fletcher, J. M., Lyon, G. R., Fuchs, L. S., & Barnes, M. A. (2007). Learning disabilities: From identification to intervention. New York: Guilford.

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**IQ has a moderate correlation with achievement, but this does not translate to a conceptual model in which IQ is a robust determinant or cause of achievement. Indeed, there is considerable evidence that the cognitive problems that reduce achievement (e.g., language) also reduce IQ. Children who don't learn to read show declines in IQ over time. IQ tests measure skills that are taught in school, such as vocabulary and critical reasoning. If IQ tests measured skills like phonological awareness and rapid naming, many children with reading problems would obtain substantially lower scores.**
Stuebing, K.K., Barth, A.E., Molfese, P.J., Weiss, B., & Fletcher, J.M. (2009). IQ is not strongly related to response to reading instruction: A meta-analytic interpretation. *Exceptional Children, 76*(1), 31-52.

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**Some people never learn:**
**1. "… all proficient readers use three major subsystems or cueing systems of language in order to construct meaning from text: the semantic, syntactic, and graphophonic systems".**
Cambourne, B. & Turbill, J. (2007). Looking back to look forward: Understanding the present by revisiting the past: An Australian perspective. *International Journal of Progressive Education, 3*(2), 8-28.

**2. Empirical investigations may demonstrate, as miscue analysis has, that phonics is a distinctly inferior cuing system, one hardly deserving any privileged status (Flurkey and Xu, 2003).**
Strauss, S. L., & Altwerger, B. (2007). The logographic nature of English alphabetics and the fallacy of direct intensive phonics instruction. Journal of Early Childhood Literacy, Volume 7 No.3, 299-317.
Flurkey, A. and Xu, J. (Eds.) (2003). *On the revolution of reading: The selected writings of Kenneth S. Goodman*. Portsmouth, NH: Heinemann.

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**Intensity of intervention is the key to significant improvement, and socialization with same-ability peers may be an equally important factor in intervention - an argument against full inclusion.**
The American Speech-Language-Hearing Association www.asha.org

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**Corrective Reading, a remedial small group form of Direct Instruction has strong evidence of effectiveness (Slavin, 2009, Best Evidence Encyclopedia)**
Slavin, R.E., Lake, C., Chambers, B., Cheung, A., & Davis, S. (2009, June). *Effective beginning reading programs*. Baltimore, MD: Johns Hopkins University, Center for Data-Driven Reform in Education.
    http://www.bestevidence.org/reading/begin_read/begin_read.htm

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The Reading Recovery program provides a further example. The data … indicate that 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

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**So the question is why is DI not being used in under-performing schools? My belief is that its a function of the political system's drive to reduce its accountability, and DI requires accountability.**

**Education indeed has deep problems.  But the problem is not discovering how to teach children or get them to learn at grade level. DI solves that problem (though no doubt in can be continuously**

**improved).**

**The deep problem is how do you get entrenched power structures to accept accountability and place improved performance as one of their goals (not just increasing their power and vanity)**
Robert Sperry, DI Listserve, Saturday - 12 September, 2009 11:18 PM

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Efforts to improve literacy achievement over the last 10 years ($1.19 billion over the past 6 years) have done little to improve the average achievement of students across the state.

Average student performance dropped further below the expected level each year as students progressed from Year 3 to Year 9 to be more than 1 term below the expected level by Year 9.

There has been no system-wide assessment of the ongoing effectiveness of key elements of the approach, such as the Reading Recovery intervention.

DEECD does not consistently use monitoring, program reviews and evaluations.

Victorian Auditor-General. (2009). *Literacy and numeracy achievement*. Retrieved from
http://www.audit.vic.gov.au/reports__publications/reports_by_year/2009/20090204_literacy_numeracy/1_executive_summary.aspx

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## Instructional Casualties
**When we look at the kids who are having a tough time learning to read and we went through the statistics, thirty-eight percent nationally, disaggregate that, seventy percent of kids from poverty and so forth hit the wall. Ninety-five of those kids are instructional casualties. About five to six percent of those kids have what we call dyslexia or learning disabilities in reading. Ninety-five percent of the kids hitting the wall in learning to read are what we call NBT: Never Been Taught. They've probably been with teachers where the heart was in the right place, they've been with teachers who wanted the best for the kids, but they have been with teachers who cannot answer the questions: 1) What goes into reading, what does it take? 2) Why do some kids have difficulty? 3) How can we identify kids early and prevent it? 4) How can we remediate it?**
G. Reid Lyon, Past- Chief of the Child Development and Behavior Branch of the National Institute of Child Health & Human Development, Source: COTC Interview -
http://www.childrenofthecode.org/interviews/lyon.htm#Instructionalcasualties

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## Instructional Confusion

**So, we have a difficult code, we have a neural system that for some children is not optimal for dealing with this code, and then we throw them an instructional system, a teaching system; teachers who don't understand what the code really is or how it needs to be conveyed. And so the teacher is suggesting you should do this when in fact the child should be doing that.**

**You can sample first or second grade classrooms around the country and you will still find, despite what we know about the process of reading and have learned over the past twenty years, you will still find that teachers for a first grader who is struggling to sound out a word who will discourage the child from doing that, and encourage the child to look at the pictures in the book and guess what that word means. Good readers don't guess, good readers sound out almost every word on the page. And so the teacher is saying you solve the task this way when in fact the task has to be solved in an entirely different way. And that can not help but confuse children. So, non-optimal instruction, and in some cases simply misleading instruction, is a significant part of the problem.**

Grover (Russ) Whitehurst, Ex-Director (2002-08), Institute of Education Sciences, U.S. Department of Education. Source: COTC Interview:
http://www.childrenofthecode.org/interviews/whitehurst.htm#WhyisReadingsoDifficult

## Insufficient Instructional Approaches

**The fact of the matter is most of our kids at risk are kids who did not have these interactions that built the fundamental, foundational linguistic building blocks. They come into kindergarten, first grade, and if they then get instructional approaches that don't take advantage of what we know about the code, if they get instructional approaches that are philosophically based, holistic and so forth, they'll never get it. Because they're coming for clarity, and if they're expected to discover these kinds of things without all of those previous building blocks how are they going to do it? It's like me being sat in front of a piano listening to Mozart without any musical background and then being expected to induce these things, expected to pick it up naturally. It just doesn't happen. So, you've got all these kinds of cultural, instructional language things moving at one time, which all can be helped and adjudicated by just knowledge.**

G. Reid Lyon, Past- Chief of the Child Development and Behavior Branch of the National Institute of Child Health & Human Development, National Institutes of Health, Current senior vice president for research and evaluation with Best Associates. Source: COTC Interview - http://www.childrenofthecode.org/interviews/lyon.htm#Necessaryinsufficient

## Instructional Confusion 2

**It's arguable, and certainly in my position, that well designed instructional materials, by well designed I mean taking into account what we know about the code and how difficult it is, how to make it simpler and more transparent in particular stages in learning to read, well designed instructional materials, teachers who know how to support children as they are exposed to those instructional materials and periodic assessments so we know when children are falling behind. Standard packages of materials as preventive strategies may be sufficient to move us substantially ahead in terms of solving this problem. It will not get us the whole way, but it's going to get us, I think, a long way there. One of the principal problems here is instructional confusion. If we can reduce that confusion we're going to generate more successes in learning to read.**

Grover (Russ) Whitehurst, Ex-Director (2002-08), Institute of Education Sciences, U.S. Department of Education. Source: COTC Interview: http://www.childrenofthecode.org/interviews/whitehurst.htm#SyncvsSystematicInstruct

## Instructional Confusion

**I sat in on a session that a colleague of mine was doing on phoneme grapheme mapping. She has designed an instructional procedure for phoneme grapheme mapping which is a nice little supplement for teachers. In the workshop I saw the same thing happening that I see all the time when I'm working with teachers which is the rather profound confusion that exists even among people who have degrees and certificates in reading instruction - how many aspects of the code are unclear to them and they go merrily along teaching their programs and teaching kids without ever resolving the questions that come up in a formal presentation. I saw this colleague of mine leading them through the phoneme grapheme mapping exercises and it was fun for me to see somebody else encountering the same questions and areas of confusion in the teacher audience that I experience all of the time.**

**The universality of those confusions was impressed on me again and how totally oblivious the teacher certification process is to equipping teachers with that knowledge base. Schools typically don't take it on as a responsibility; they typically don't teach it very well if they teach it at all. The instruction is not well conceived even if it is there. People leave those certification programs with**

**the responsibility of teaching kids but without the tools to really make any of these English code issues clear to kids.**

Louisa Moats, Director, Professional Development and Research Initiatives at Sopris West Educational Services; Author, Speech to Print: Language Essentials for Teachers, Parenting a Struggling Reader, and LETRS (Language Essentials for Teachers of Reading and Spelling). Source: COTC Interview: http://www.childrenofthecode.org/interviews/moats.htm#InstructionalConfusion

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## The Code Hasn't Been Seriously Taught

**My humble opinion is the problem with learning the code is not really with the code, it's with the teaching of the code. We have long periods in the history of reading instruction in America where the code wasn't taught or was taught in such a boring, offensive or misleading way that it didn't do much good. I could even be more extreme and say that teaching the code probably was a negative factor. Drilling kids to death on letter-sound correspondences probably is as bad as not teaching them at all. Or almost so.**

**So, the first problem that I see is that it's difficult to find a time when the code was seriously taught and taught well. And I can't explain why it is that even today there is such enormous resistance to deal with the code among the college faculty who teach reading methods to pre-service and in-service teachers.**

Richard Venezky, Past Unidel Professor of Educational Studies and Professor of Computer and Information Sciences, and Linguistics at the University of Delaware. He is the author of The American Way of Spelling: The Structure and Origins of American English Orthography. Source: COTC Interview - http://www.childrenofthecode.org/interviews/venezky.htm#TheCode

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## Efficacy of Good Instruction

**There's good research that points to the dramatic efficacy of good instruction. It is true that not enough good instruction is getting to kids. Kids just don't have the benefit of it. Teachers need to be trained in order to carry out the kind of instruction that is effective. And, there is good research to show that up to ninety-five percent or so of reading problems, reading difficulties can be effectively addressed if that instruction is there and delivered in the right way. That still leaves about four to six percent of the student population that is not responding, that is still struggling, that needs some other kind of intervention, some other kind of instruction.**

**And interestingly, the percentage of children in the school age population who have learning disabilities right now is about five percent. And they need even more intensive, individualized instruction in order to address their underlying problems. Not all the problems are going to be solved simply because we get classroom teachers up to a certain level.**

James Wendorf, Executive Director, National Center for Learning Disabilities. Source: COTC Interview - http://www.childrenofthecode.org/interviews/wendorf.htm#InstructionalCasualities

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## Difference Between an Instructional Casualty and a Student with a Neurobiological Disability

**I think there is a difference between a student who is an 'instructional casualty'; in other words, a student who has not flourished in the schools, who has not had access to the right kind of teaching, a student whom the schools have failed in some way. There's a difference between that kind of student and a student with an underlying neurobiological disability. Learning disabilities are not acquired; they are there - they are life long - they are real. They can be expressed in any number**

of ways early on; they could appear later in a school career, even as late as high school or adulthood.

James Wendorf, Executive Director, <u>National Center for Learning Disabilities</u>. Source: COTC Interview - <u>http://www.childrenofthecode.org/interviews/wendorf.htm#NeurobiologicalDeficienciesVsInstruc</u>

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**Is English Predictable Enough for Explicit Spelling Instruction?**
**This is a question we hear often. If English spelling were completely arbitrary, one could argue that visual memorization would be the only option. However, spelling is not arbitrary. Researchers have estimated that the spellings of nearly 50 percent of English words are predictable based on sound-letter correspondences that can be taught (e.g., the spellings of the /k/ sound in back, cook, and tract are predictable to those who have learned the rules). And another 34 percent of words are predictable except for one sound (e.g., knit, boat, and two).† If other information such as word origin and word meaning are considered, only 4 percent of English words are truly irregular and, as a result, may have to be learned visually (e.g., by using flashcards or by writing the words many times).**

Malatesha, R., Joshi, M., Treiman, R., Carreker, S., & Moats, L.C. (2008). How words cast their spell. *American Educator*, 6-16, 42.

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**The ideal solution to any object-identification task is template matching, rather than detection of individual features (Tjan, Braje, Legge, & Kersten, 1995). However, normal human readers appear constrained to proceed by features, even for identifying simple and highly trained stimuli such as letters.**

Fiset,D., Blais, C., Éthier-Majcher, C., Arguin, M., l Bub, D., & Gosselin, F. (in press). Features for identification of uppercase and lowercase letters. *Psychological Science*.

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**New patterns may be embedded in a fresh network relatively quickly. When a network is already converged to a specific set of patterns and partially pruned, it will require many more repetitions to "overlearn" a new—especially a contradictory—pattern.**

Satinover, J. (2001). *The quantum brain: The search for freedom and the next generation of man*. New York: Wiley.

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**MOST teachers do not know how to teach grammar and will have to be retrained to do so, according to the head of the National Curriculum Board. Professor Barry McGaw says most teachers under 50 are unfamiliar with how to teach formal grammar because they were not taught it as children. "Lots of teachers do not have the vocabulary or the techniques to teach grammar because they didn't learn it at school," he says. "One of the reasons people turned away from grammar then was that educators became persuaded that it was boring for kids and it did not relate clearly to the way children wrote well and in an interesting manner."**

Milburn, C. (2008, 24 November). Teachers 'must learn' grammar. The Age Education, p. 3.

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**Although neurological variables may explain why individuals with dyslexia struggle more than children without dyslexia in learning to read, the dyslexic brain may still show plasticity in response to instructional interventions. Specific language processes may normalize after short-term treatment, suggesting that if appropriate instruction is sustained, this treatment may lead to full compensation (full recovery of normal reading). Evidence for such brain plasticity in individuals with dyslexia, which is associated with differences in occipital–temporal, temporal–parietal, and frontal brain systems (e.g. Shaywitz & Shaywitz, 2003), has been reported following treatment. fMRI tasks have shown pre- to post-treatment changes in brain activation levels and patterns in frontal systems (Aylward et al., 2003; Richards et al., 2000, 2002; Temple et al., 2000, 2003; Shaywitz et al., 2004), temporal–parietal regions (Aylward et al., 2003; Eden et al., 2004; Shaywitz et al., 2004; Simos et al., 2002; Temple et al., 2003), and occipital–temporal regions (Aylward et al., 2003; Shaywitz et al., 2004). Plasticity of brain response has been observed across the life span: (a) in younger students in response to explicit phonological awareness and phonics instruction (Shaywitz et**

**al., 2004; Simos et al., 2002**), (b) in upper elementary and middle school students in response to instruction designed to increase the precision of phonological and orthographic word representations and the efficiency of the working memory architecture (**Aylward et al., 2003; Richards et al., 2000, 2002**), and (c) in adults in response to explicit instruction in sound and articulatory awareness and phonics training (**Eden et al., 2004**). Brain plasticity has also been demonstrated for normal adolescents learning non-word associations (**Molfese et al., 2002**) and normal adults learning a miniature visual language (**McCandliss, Posner, & Given, 1997**). See **Richards et al. (in press)** and Berninger (in press) for additional details of these studies, which varied in imaging modality, imaging tasks, age of participants, and nature of the treatment.

Richards, T., Aylward, E., Berninger, V., Field, K., Grimme, A.C., Parsons, A., Richards, A.L., Nagy, W. (2006). Individual fMRI activation in orthographic mapping and morpheme mapping after orthographic or morphological spelling treatment in child dyslexics. *Journal of Neurolinguistics, 19*(1), 56–86.

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**Our results, based on a combined analysis of white and gray matter abnormalities, demonstrate the coexistence of local cortical changes together with irregularity of cortico-cortical connectivity, which provides exceedingly strong evidence for a combination of a disconnection syndrome and/or dysfunction of cortical areas relevant for reading and spelling as the most likely mechanism in developmental dyslexia.**

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**German dyslexics show relatively high reading accuracy already in childhood, but are impaired in reading speed** (Wimmer, Landerl, & Frith, 1999; Ziegler, Perry, Ma-Wyatt, Ladner, & Schulte-Körne, 2003).

**The relations between anisotropy and speed of pseudoword reading found in this study indicate that the integrity of the white matter might directly contribute to a central aspect of reading skills in German, namely to the speed with which the graphemic code can be recoded and transformed into a phonological code. For the dyslexic group, this seems to be a plausible explanation, as cortical structures located in proximity to the two left-hemispherical fronto-temporal and temporo-parietal white matter tracts related to pseudoword reading are preferentially involved in pseudoword reading and contribute to the process of transforming orthographic into phonological information (Burton, 2001; Fiez & Petersen, 1998; Pugh et al., 2000). Therefore, the degree of myelination of axons connecting brain regions involved in spelling to sound conversions seems to affect the speed of phonological decoding in reading. So far, our study is the first DTI study which demonstrates near significant relations between reading ability of dyslexics and white matter integrity in a right hemisphere region, namely a fronto-temporal region. Although right-sided inferotemporal cortical areas become less active in skilled readers (Turkeltaub, Gareau, Flowers, Zeffiro, & Eden, 2003), neuroimaging studies have shown that reading is still associated with widespread right-hemispheric activations in adulthood (Fiez & Petersen, 1998). Moreover, dyslexics exhibit increased activation of the right inferior frontal gyrus in pseudoword reading, which is assumed to fulfil a compensatory function (Pugh et al., 2000).**

Steinbrink, C., Vogt, K., Kastrup, A., Müller, H.-P., Juengling, F.D., Kassubek, J. & Riecker. A. (2008). The contribution of white and gray matter differences to developmental dyslexia: Insights from DTI and VBM at 3.0 T. *Neuropsychologia 46*(13), 3170–3178.

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**Some alphabetic writing systems, such as English, are fairly inconsistent in the mapping between orthography and phonology. Numerous studies have shown that lower phonological consistency, which occurs when the same spelling has different pronunciations (e.g.** *seat* **versus** *sweat***), slows reaction time of adults during lexical decision, naming, and reading tasks in the visual modality (Fiez, Balota, Raichle, & Petersen, 1999; Jared,McRae, & Seidenberg, 1990; Lacruz & Folk, 2004; Stone, Vanhoy, & VanOrden, 1997; Ziegler,Montant, & Jacobs, 1997).**

**Neuroimaging studies have shown that phonological consistency is associated with specific brain activity. Studies have found that adults show greater activation for lower phonological consistency**

words in left inferior frontal gyrus (**Binder, Medler, Desai, Conant, & Liebenthal, 2005; Fiez et al., 1999; Herbster, Mintun, Nebes, & Becker, 1997; Katz et al., 2005; Peng et al., 2004; Tan, Feng, Fox, & Gao, 2001**), left superior temporal cortex (**Peng et al., 2004; Tan et al., 2001**) and left inferior parietal cortex (**Binder et al., 2005; Peng et al., 2004**). Other studies not examining the phonological consistency effect have implicated posterior dorsal inferior frontal gyrus and superior temporal gyrus in phonological processing (**Poldrack et al., 1999; Vigneau et al., 2006**) and inferior parietal cortex in integrating orthographic and phonological representations (**Booth et al., 2002, 2003**). Neuroimaging studies also show that lower phonological consistency words produce greater activation in medial frontal gyrus/anterior cingulate cortex (**Binder et al., 2005; Tan et al., 2001**).

Finally, only one study has shown a phonological inconsistency effect in fusiform gyrus, but this was limited to low frequency words (**Peng et al., 2004**). Fusiform gyrus has been implicated in orthographic processing (**Cohen, Jobert, Le Bihan, & Dehaene, 2004; Dehaene et al., 2004**). However, patient studies suggest that the fusiform gyrus may play a critical role in the phonological consistency effect. Adult patients with damage to posterior inferior temporal cortex (BA 20, 37) have a more severe deficit with spelling lower consistency compared to higher consistency words, and most errors are phonologically plausible (**Rapcsak & Beeson, 2004**). In addition, a case study in 14-year-old girl with left occipital lesion showed that she was more successful at reading higher consistency than lower consistency words, with most errors involving regularization (**Samuelsson, 2000**).

Bolgera, D.J., Minasa, J., Burmana, D.D., & Bootha, J.R. (2008). Differential effects of orthographic and phonological consistency in cortex for children with and without reading impairment. *Neuropsychologia, 46*(14), 3210–3224.

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The "bottleneck" hypothesis, originally proposed by Broadbent (1958) has been used to explain reading comprehension difficulties as they related to speed of decoding (Treisman, 1960; Deutsch & Deutsch, 1963; Perfetti & Lesgold, 1977). According to this theory word decoding processes and comprehension processes compete for a space in the short term memory. Therefore in the case of poor readers, slow and less automatic decoding creates a "bottleneck" in working memory leaving less functional capacity available to them for comprehension processes. As a result it is possible that an earlier part of a sentence may no longer be available in the working memory when the final part has been decoded and can't be integrated with the earlier part.

Broadbent, D. E. (1958). *Perception and communication*. New York: Pergamon.
Treisman, A. M. (1960). Contextual cues in encoding listening. *Quarterly Journal of Experimental Psychology, 12,* 242-248.
Perfetti, C.,A., & Lesgold, A.M. (1977). Coding and comprehension in skilled reading and implications for reading instruction. In L.B. Resnick & P.A. Weaver (Eds.), *Theory and practice of early reading* (Vol. 1, pp 57-84). Hillsdale, NJ: Erlbaum.
Deutsch, J. A., & Deutsch, D. (1963). Attention: some theoretical considerations. *Psychological Review, 70,* 80-90

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However, Mastropieri, Leinart, and Scruggs (1999), researchers with a long history in devising and evaluating metacognitive strategies, offer this timely caveat to those tempted to focus exclusively on comprehension strategies. "However, reading programs that do not attempt directly to enhance the reading fluency of dysfluent readers cannot be considered complete – no amount of comprehension training can compensate for a slow, labored rate of reading" (p.278).

Mastropieri, M.A., Leinart, A.W., & Scruggs, T.E. (1999). Strategies to increase reading fluency. *Intervention in School and Clinic, 34*(5), 278-283, 292.

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Cognitive psychology has long since reached a level of sophistication that enables it to explain why it is highly ineffective to teach higher-order skills as formal structures. This finding is the most plausible explanation for the historical paradox that national systems that stress content more than skills nonetheless inculcate these higher-order skills more effectively than systems that try to teach higher-order skills as such. To teach content *is* to teach higher-order skills; to teach higher skills explicitly is to pursue a phantom.

Hirsch, E. D. (2003, Spring). Not so grand a strategy. *Education Next,* 68-72.

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**Previous research has identified at least six candidate genes that appear to influence the odds of developing dyslexia, a learning difficulty which affects the development of literacy and language skills. The most likely of the candidates - implicated in at least three separate studies - is a gene called KIAA0319, which lies on chromosome six. In the latest study, the Oxford team examined the link between this haplotype and reading ability in a sample of 6,000 seven to nine-year old children taking part in a major long-term study known as the Avon Longitudinal Study of Parents and Children (ALSPAC).**

http://news.bbc.co.uk/2/hi/health/7643760.stm

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**Taken together with the findings of the present study, it would be estimated that the prevalence of late-emerging RD is between 36% and 46%. The late emergers' lack of age appropriate growth in phonological processing after Grade 2, combined with their sharp decline in age appropriate word reading skills in Grade 4, suggests that in earlier grades, these students were reading by sight and, thus, in the average range when reading high-frequency words. With the combination of underdeveloped phonological skills and the increased complexity of word reading by Grade 4, it is plausible that this group was not able to maintain age-appropriate word reading levels in Grade 4. This explanation is consistent with Juel's (1991) argument that some children rely almost entirely on memorization of words and appear to be succeeding in learning to read for the first several years, until that strategy becomes ineffective and insufficient.**

Retrospective analyses of the reading development of grade 4 students with reading disabilities: Risk status and profiles over 5 years Orly Lipka, Nonie K. Lesaux, and Linda S. Siegel JLD

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**The What Works Clearinghouse (Institute of Education Sciences, 2003) identified several features of intervention research designs that improve confidence in findings from research. Three of the most significant criteria identified include (a) the use of random assignment, (b) evidence of the use of a fidelity of treatment check, and (c) the use of standardized measurements. Random assignment is the most critical element of a true experimental design, providing the greatest evidence of causal effects. Five of the 19 studies that met the criteria for this synthesis used random assignment of students to treatment and comparison groups (Darch, Kim, & Johnson, 2000; Fulk, 1996; Lewis, Graves, Ashton, & Kieley, 1998; Raskind & Higgins, 1999; Torgesen et al., 2001). A fidelity of treatment check, often referred to as treatment integrity, can improve our confidence in the accuracy and consistency of an intervention's implementation (Gresham, MacMillan, Beebe-Frankenberger, & Bocian, 2000). Data on intervention fidelity are necessary to determine whether the intervention was implemented as intended and, therefore, whether the intended intervention is responsible for the outcomes reported. Despite differences are research design, six studies in this synthesis included evidence of fidelity of treatment in the study (Grskovic & Belfiore, 1996, Hughes, Frederick, & Keel, 2002; Keel, Slaton, & Blackhurst, 2001; Lewis et al., 1998; Morton, Heward, & Alber, 1998; Telecsan, Slaton, & Stevens, 1999). Using reliable and valid standardized measures is another important criterion that can improve confidence in study results. When measures developed by researchers are used to measure the effects of an intervention, effect sizes are often higher (Swanson & Hoskyn, 1998), thereby contributing to potentially biased effects of the intervention. Only three studies (Masterson & Crede, 1999; Raskind & Higgins, 1999; Torgesen et al., 2001) in this synthesis used standardized measures. Markedly, none of the studies included in this synthesis incorporated all three of the best evidence criteria. Only three studies included two or more of the criteria (Lewis et al., 1998; Raskind & Higgins, 1999; Torgesen et al., 2001).**

Institute of Education Sciences. (2003). What Works Clearinghouse study review standards. Retrieved January 10, 2005, from http://www.whatworks.ed.gov/

However, it would seem that rapid and accurate word identification is particularly crucial if the reader is to complete higher-level processing successfully. The result fits well with the idea that efficient and automatic word identification liberates resources for effective higher-level processing (Perfetti, 1985, 1992).

Recent research on younger readers has shown that the contribution of word recognition to reading comprehension can vary widely depending on the type of comprehension test used (Cutting & Scarborough, 2006; Keenan, Betjemann & Olson, 2008).

This may be because an individual's phonological representations of words become increasingly influenced by their spelling knowledge (Ehri, 1991, 2005). Once reading is well under way, both children and adults have great trouble deleting sounds from spoken words when the phoneme is not clearly marked in the orthography, such as deleting the /w/ sound in *quack* or the /k/ sound in *fox* (Castles, Holmes, Neath & Kinoshita, 2003). People also respond that there are more sounds in spoken words containing more letters, such as *pitch* than in words containing fewer letters, such as *rich* (Ehri & Wilce, 1980; Tunmer and Nesdale, 1985). In short, literate individuals find it difficult to disregard their knowledge of the spelling of spoken words when asked to make judgments on how they sound.

Holmes, V.M. (2009) Bottom-up processing and reading comprehension in experienced adult readers. *Journal of Research in Reading, 32*(3), 309–326.

We suggest that the source of our effects lies in the focus of attention (and hence direction of resources), specifically the degree to which readers are focused on orthographic and phonological mappings of a word while they decode it. The semantic information provided by sentence context provides top-down support for word reading that allows readers' focus to be drawn away from word decoding. Without enough focus, readers fail to encode the appropriate orthographic and phonological information. This is true for both more skilled and less skilled readers, but it is more relevant to less skilled readers because they have a greater need to focus on letter–sound processing of new words due to their weaker decoding skills.

Landi, N., Perfetti, C.A., Bolger, D.G., Dunlap, S. & Foorman, B.R. (2006). The role of discourse context in developing word form representations: A paradoxical relation between reading and learning. *Journal of Experimental Child Psychology, 94*(2), 114-133.

Almost half of all Australians aged 15-74 years had literacy skills *below level 3*. Someone with skill level 1 may have trouble using a bus timetable or completing basic forms. People at this skill level may be able to locate some information on a medicine label; however, skill level 1 includes people who could not complete such tasks.

At skill level 2 a person may be able to complete the tasks mentioned above, but may not be able to interpret a weather map or summarise a piece of text.

At skill level 3 people may not be able to compare and contrast written information, extract information from a pamphlet or interpret pie charts. Level 3 is regarded by experts as a suitable minimum for 'coping with the increasing demands of the emerging knowledge society and information economy'.

Australian Bureau of Statistics. (2008). *Adult Literacy and Life Skills Survey (ALLS 2006-2007).* Retrieved July 29, 2008, from http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4102.0Chapter6102008

These findings support the notion that following visual processing of printed stimuli (which takes place in complex visual processing areas), poor readers do not use their left temporoparietal region for phonological processing of the visual symbols, but ineffectively employ their inferior frontal and

**right posterior temporal cortices (Simos et al., 2005; Simos, Breier, Fletcher, Foorman, et al., 2000; Simos, Breier, Fletcher, Bergman, & Papanicolaou, 2000).**
Simos, P.G., Fletcher, J.M., Sarkari, S., Billingsley-Marshall, R.L., Denton, C.A., Papanicolaou, A.C. (2007). Intensive instruction affects brain magnetic activity associated with reading fluency in children with dyslexia. *Journal of Learning Disabilities, 40*(1), 37-48.

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**Although the role of the left occipitotemporal region in complex visual–graphemic processing is now supported by several studies, mostly with experienced readers, there are some indications that the right occipitotemporal region may play a greater role in beginning reading. This is supported by findings of bilaterally symmetric duration of activity in this region in children as opposed to adult skilled readers (Simos et al., 2001) and, of course, by the present findings. One possible explanation is that this region operates as a complex visual processing area in beginning readers, supporting an early strategy of visual letter/word recognition (see, e.g., Ehri, 1996; Gough, 1993).**
Simos, P.G., Fletcher, J.M., Sarkari, S., Billingsley-Marshall, R.L., Denton, C.A., Papanicolaou, A.C. (2007). Intensive instruction affects brain magnetic activity associated with reading fluency in children with dyslexia. *Journal of Learning Disabilities, 40*(1), 37-48.

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**One could conclude from this that … above average reading skills draw more heavily and more consistently on left hemisphere mechanisms.… Average and below-average readers, in contrast, draw more heavily on right-hemisphere skills…. Above-average readers exhibit more hemisphere differences than average readers, who, in turn, generate more hemisphere differences than below-average readers.**
Molfese, D. L., Key, A.F., Kelly, S., Cunningham, N., Terrell, S., Ferguson, M., Molfese, V.J., & Bonebright, T. (2006). Below-average, average, and above-average readers engage different and similar brain regions while reading. *Journal of Learning Disabilities, 39*(4), 352-363.

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Based on all the evidence we have so far, **we really have very little evidence that even in deep alphabetic orthographies people rely on more visual skills, so let's say memorization of whole words, more than readers of transparent orthographies.** If you look at how well things like visual memory or visual discrimination tasks correlate with word reading across languages, you certainly don't find stronger correlations, let's say with English readers than you might with Czech readers. In fact, they tend not to correlate, or only very weakly, anyway. **Whereas what we do find is that when you look at the role of phonological processing, morphological processing, these language-based processes, those do correlate, and they do account for variability in people's performance.** The picture might be slightly different for reading nonalphabetic systems, like Chinese, in that visual processes might play a stronger role; that's what very recent work by people like Charles Perfetti and his colleagues is showing. But, even in Chinese, the phonological component is a critical component of word recognition.

Then, another issue pertains to the typical severity of impairments in dyslexia in different languages. One lay belief is that children with dyslexia learning transparent orthographies must have "smaller" or less severe difficulties than children learning deep orthographies. Well, my own work comparing Czech and English speaking children, dyslexic groups and controls, shows that within their own language context -- for example, Czech dyslexic children -- they show very large delays, relative to typical readers in their language group. **However, their overall performance tends to be higher relative to English speaking children if you give them the same types of tasks -- word level decoding, word level spelling, and phonological awareness tasks, and so on. So there does seem to be some sort of additional cost that English poor readers suffer over and above whatever they would suffer if they were functioning in a transparent system.** But relative to the *norm* in their language, the deficits of Czech and English children with dyslexia are basically equally severe.

The reciprocal relationship between spelling and reading: Initially, all of their skills were bottom up, driven by phonological awareness, letter knowledge, and some kind of mapping skill. But as they became more proficient spellers they also became more proficient decoders, and then eventually it was the

decoding and the word recognition skills that started to impact on their ability to complete the orthographic representations, the spellings according to English conventions.

Caravolas, M. (2008). Children of the Code interview.
http://www.childrenofthecode.org/interviews/caravolas.htm

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These findings of initial parietotemporal underactivation among poor readers provide evidence against a common misconception about dyslexia. There is a persistent but incorrect belief that dyslexia is primarily caused by difficulties in the visual perception of letters, leading to confusions between letters like "p" and "d". However, such visual difficulties are the cause of dyslexia in only about 10 percent of the cases. **The most common cause, accounting for more than 70 percent of dyslexia, is a difficulty in relating the visual form of a letter to its sound, which is not a straightforward process in the English language. The same parietotemporal areas of the brain that showed increased activation following instruction are centrally involved in this sound-based processing.**

Carnegie Mellon University (2008, June 12). Remedial instruction can make strong readers out of poor readers, brain imaging study reveals. *ScienceDaily*. Retrieved June 18, 2008, from
http://www.sciencedaily.com/releases/2008/06/080611103900.htm

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**… there is this absolute difference between learners of deep and transparent writing systems, in just the level of performance that they reach with the orthography at a particular age. …the factor that distinguishes the transparent ones from the deep or opaque systems is the inconsistency in the mapping between letters and phonemes. The extent to which a language allows multiple correspondences from print to sound, and from sound to print, is what makes it more or less opaque, more or less ambiguous, and makes it more or less difficult to learn.**
June 18, 2008 Dr. Marketa Caravolas: Orthographic Depth and Other Contributors to International Differences in Children's Reading Acquisition. Children of the Code
http://www.childrenofthecode.org/updates/061808.htm

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**Christine Gilbert, chief inspector of Ofsted, said it was "unacceptable" that 20 per cent of pupils still fail to master basic English and maths aged 11, while one in 10 teenagers drops out of education and work.**
Judd, T. (2008). A fifth of 11-year-olds have failed to learn basic English and maths. The Independent, 20/5/2008. http://www.independent.co.uk/news/education/education-news/a-fifth-of-11yearolds-have-failed-to-learn-basic-english-and-maths-831023.html

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"The evidence is pretty much overwhelming," said Prof Steve Dinham, the Australian Council for Educational Research research director for teaching, learning and leadership. **"Direct instruction and explicit teaching is two to three times more effective than inquiry-based learning or problem-based learning."**
Smith, B. (2008). Results back principal's return to instruction. The Age, 10 May, p.8.

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**Balance deficits are associated with dyslexia, but these effects are apparently more strongly related to third variables other than to reading ability. Deficits of balance may indicate increased risk of developmental disorder, but are unlikely to be uniquely associated with dyslexia.**
Rochelle, K.S.H., & Talcott, J.B. (2006). Impaired balance in developmental dyslexia? A meta-analysis of the contending evidence. *Journal of Child Psychology and Psychiatry 47*(11), 1159–1166.

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**Our findings are consistent with prior research findings showing that children with lower levels of initial reading and vocabulary skill are more vulnerable to the quality and quantity of instruction they receive (Scanlon & Vellutino, 1996; Snow et al., 1998; Sweet & Snow, 2002; Vellutino et al., 2003).**
Al Otaiba, S., Connor, C., Lane, H., Kosanovich, M.L., Schatschneider, C., Dyrlund, A.K., Miller, M.S., & Wright, T.L. (2008). *Reading First* kindergarten classroom instruction and students' growth in

phonological awareness and letter naming–decoding fluency. *Journal of School Psychology, 46*(3), 281-314.

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**Thus, our findings are consistent with the emerging response to intervention literature base showing that (a) weak oral language skills and impoverished home environments are common characteristics of children who do not respond to early literacy instruction (Al Otaiba & Fuchs, 2002; Torgesen, 2000; Torgesen et al., 1999**
**(b) children with strong oral language skills may be more able to compensate for other weaknesses in reading (phonological awareness, decoding, or comprehension) than are children with weaker skills (Connor et al., 2004; NICHD-Early Child Care Research Network, 2005; Shaywitz et al., 2003; Spira et al., 2005; Stanovich, 1980; & Stanovich, 1984).**

Al Otaiba, S., Connor, C., Lane, H., Kosanovich, M.L., Schatschneider, C., Dyrlund, A.K., Miller, M.S., & Wright, T.L. (2008). *Reading First* kindergarten classroom instruction and students' growth in phonological awareness and letter naming–decoding fluency. *Journal of School Psychology, 46*(3), 281-314.

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**Converging research findings have demonstrated that reading trajectories, which are established early in children's school careers, are remarkably stable and therefore difficult to change (Coyne et al., 2004; Good et al., 2001; Juel, 1988; Torgesen and Burgess, 1998). … A gap between weak and strong reading achievement in these two domains (decoding & comprehension) begins early and subsequently widens over the elementary years (Allington, 2002; Cunningham and Stanovich, 1997; Stanovich, 1986), and becomes increasingly difficult to close, particularly after third grade (Fletcher & Foorman, 1994; Kennedy et al., 1986; Lyon, 1985; Spira et al., 2005).**

Al Otaiba, S., Connor, C., Lane, H., Kosanovich, M.L., Schatschneider, C., Dyrlund, A.K., Miller, M.S., & Wright, T.L. (2008). *Reading First* kindergarten classroom instruction and students' growth in phonological awareness and letter naming–decoding fluency. *Journal of School Psychology, 46*(3), 281-314.

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**One recent study of 20 urban first grade classrooms demonstrated a reliable association between student reading fluency outcomes and observations of their teachers' implementation efficacy (Haager, Gersten, Baker & Graves, 2003). Teacher's observation scores had moderate to good correlations with their students' growth in oral reading fluency (ranging from .49 to .62). Teachers who were rated as "effective" or "very effective" modelled strategies, taught explicitly, maximized student time on task, and provided small group individualized instruction; their students read more words correctly per min than students with ineffective teachers. In classrooms led by teachers rated as ineffective, 60–88% of children were at high risk for future reading difficulties, scoring below 18 words correct per min.**

Al Otaiba, S., Connor, C., Lane, H., Kosanovich, M.L., Schatschneider, C., Dyrlund, A.K., Miller, M.S., & Wright, T.L. (2008). *Reading First* kindergarten classroom instruction and students' growth in phonological awareness and letter naming–decoding fluency. *Journal of School Psychology, 46*(3), 281-314.

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**The correlations of ORF with both FCAT-SSS and SAT-10 were high (rS=.70–.71) and consistent with previous findings about the relationships between oral reading fluency and reading comprehension (Good et al., 2001; Buck & Torgesen, 2003; Schilling, Carlisle, Scott, & Zeng, 2007). As expected, the relationships between the third administration (Winter 2 Assessment) for ORF and both FCAT-SSS and SAT-10 were the strongest observed correlations in both samples, corresponding to the concurrent time interval the tests were given. Thus, DIBELS is related equally well to a common measure of reading comprehension used across states as it is to a state-developed measure.**

Roehrig, A.D., Petscher, Y., Nettles, S.M., Hudson, R.F., & Torgesen, J.T. (2008). Accuracy of the DIBELS Oral Reading Fluency measure for predicting third grade reading comprehension outcomes. *Journal of School Psychology, 46*(3), 343–366.

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**Children who had quick and accurate oral reading had shorter and more adultlike pause structures, larger pitch declinations at the end of basic declarative sentences, and larger pitch rises at the end of yes–no questions. Furthermore, children who showed larger basic declarative sentence declinations and larger pitch rises following yes–no questions tended to demonstrate greater reading comprehension skills.**

Miller, J., & Schwanenflugel, P.J. (2006). Prosody of syntactically complex sentences in the oral reading of young children. *Journal of Educational Psychology*, *98*(4), 839-853.

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**We did a study to classify reading problems and found that 88 percent of the children with reading problems had phonologic difficulties.**

Shaywitz, S. (2003). On the mind of a child: A conversation with Sally Shaywitz. *Educational Leadership, 60*(7), 6-10.

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**CHILDREN today are no better at reading, writing and arithmetic than their parents and grandparents were, despite better technology, smaller class sizes and developments in theories of education. The research, titled *How Has School Productivity Changed in Australia?* challenges the assumption that class sizes and school funding have a strong impact on academic results. With per-child spending rising but results almost unchanged, the researchers say this represents a decline in school productivity of 13% with regard to the numeracy data, and 73% in the area of literacy.**

Sharp, A. (2008). Teen performance on three Rs in decline. The Age, 11 February 2008, p.3. See report at Leigh, A & Ryan, C. (2008). How has school productivity changed in Australia?  The Australian National University, Canberra. Retrieved September 12, 2008, from
http://econrsss.anu.edu.au/~aleigh/pdf/SchoolProductivity.pdf

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"In terms of literacy and numeracy test scores, a 75th percentile teacher can achieve in three-quarters of a year what a 25th percentile teacher can achieve in a full year; while a 90th percentile teacher can achieve in half a year what a 10th percentile teacher can achieve in a full year" (p.18).

Leigh, L. (2009). Estimating teacher effectiveness from two-year changes in students' test scores. Discussion Paper No. 619**.** Research School of Social Sciences, Australian National University.
http://cbe.anu.edu.au/research/papers/ceprdpapers/DP619.pdf

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**Phonics (the method of teaching children to read and pronounce words by associating letters with the sounds they represent) should be prescribed in a national curriculum for students in the early years of school.**

Professor Barry McGaw, chairman of the National Curriculum Board in:
Tomazin, F. (2008). Stop holding back top students: Curriculum chief. *The Age (Education),* 1 February 2008, p.3.

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**Abstract:**
**International research suggests that differences in teacher performance can explain a large portion of student achievement. Yet little is known about how the quality of the Australian teaching profession has changed over time. Using consistent data on the academic aptitude of new teachers, we compare those who have entered the teaching profession in Australia over the past two decades. We find that the aptitude of new teachers has fallen considerably. Between 1983 and 2003, the average percentile rank of those entering teacher education fell from 74 to 61, while the average rank of new teachers fell from 70 to 62. We find that two factors account for much of the decline: a fall in average teacher pay (relative to other occupations) and a rise in pay differentials in non-teaching occupations.**

Leigh, A & Ryan, C. (2008). How and why has teacher quality changed in Australia? *Australian Economic Review, 41*(2), 141-159. Available at SSRN: http://ssrn.com/abstract=1148460 or DOI: 10.2139/ssrn.10.1111/j.1467-8462.2008.00487.x

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**A study by Andrew Leigh and Chris Ryan at the Australian National University shows that the academic aptitude of new teachers is plummeting. Between 1983 and 2003, the average percentile rank of those entering education courses fell from 74 to 61.**

Milburn, C. (2008, Feb 4). Push for trial of merit pay. *The Age (Education),* p.3.

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**"In 2006, the results needed to meet national benchmarks for students in Years 3, 5 and 7 ranged from 22 per cent to 44 per cent, with an average of less than 34 per cent. Year 3 students needed to achieve only 22 per cent for reading, 39 per cent for numeracy, and 30 per cent for writing to be classified as meeting the minimum acceptable standard."**
Strutt, J. (2007). Students fail on 'three Rs' test. *The West Australian*, Monday 10 December.

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**"Almost half of Australian adults do not have the basic reading and writing skills needed for everyday living have difficulty finding information in newspapers, using a bus timetable or understanding directions on medicine labels, a new report reveals. The Australian Bureau of Statistics adult literacy and life skills survey found the worst literacy problems were in school leavers aged 15 to 19. The survey tested nearly 9000 people aged between 15 and 74 on their ability to deal with the literacy demands of everyday life. 46 - 70% of Australian adults had poor or very poor skills across one or more areas of literacy. They had not attained the level of literacy skills regarded as the minimum required to cope with modern life.**
Hiatt, B. (2007). Half of Australians illiterate. The West Australian, Wednesday 28 November, p.3.

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**More than 50% of individuals with RD also have deficits in mathematical competence (Badian, 1983). This comorbidity has been described by some investigators as reflecting general deficits in the representation or retrieval of information from semantic memory that adversely affect reading and math acquisition, and by others as representing secondary difficulties in math for individuals with RD** (Ashcroft & Battaglia, 1978; Geary, 1993; Gillis & DeFries, 1991; Muth, 1984).
Lovett, M. W., Steinbach, K. A., &. Frijters, J.C. (2000). Remediating the core deficits of developmental reading disability: A Double-Deficit perspective. *Journal of Learning Disabilities, 33*, 334-358.

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**Older students with reading difficulties benefit from interventions focused both at the word level and at the text level. Identifying need and intervening accordingly in the appropriate areas (e.g., vocabulary, word reading, comprehension strategies, and so on) is associated with improved outcomes for older students with reading difficulties.**
Scammacca, N., Roberts, G., Vaughn. S., Edmonds, M., Wexler, J., Reutebuch, C. K., & Torgesen, J. K. (2007). *Interventions for adolescent struggling readers: A meta-analysis with implications for practice.* Portsmouth, NH: RMC Research Corporation, Center on Instruction.
http://flare.ucf.edu/Research/Interventions%20for%20Struggling%20Readers.pdf

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**These various data converge to indicate that the cerebral representation of letters might not be strictly visual, but might be based on a complex neural network including a sensorimotor component acquired while learning concomitantly to read and write. Close functional relationships between the reading and writing processes might occur at a basic level, in addition to the interactions that have been described at a more cognitive level (Fitzgerald & Shanahan, 2000).**

Longcamp, M., Zerbato-Poudou, M.T., & Velay, J.L. (2005). The influence of writing practice on letter recognition in preschool children: A comparison between handwriting and typing. *Acta Psychologia, 119,* 67-79.

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**Research conducted over the past thirty years has provided considerable evidence to support the efficacy of direct instruction programs in primary schools. Recent meta-analyses of intervention research have found that techniques associated with direct instruction are among the most effective teaching practices for improving academic achievement, particularly for students with learning difficulties (e.g., Borman *et al*., 2003; Forness, Kavake, Blum & Lloyd, 1997). … There is substantial evidence relating the use of direct instruction in the development of phonemic awareness and phonological knowledge, vocabulary knowledge and word recognition (e.g., Foorman, Francis, Fletcher, Schatschneider & Mehta, 1998; Munro, 1997, 1998, 1999, 2000a,b; Rohl, 2000; Rohl & Pratt, 1995; Swanson, 1999; Wright & Jacobs, 2003). … Support also has been found for the benefit**

**of direct instruction in the teaching of reading comprehension (e.g., Foorman *et al*., 1998; Gardill & Jitendra, 1999; Swanson, 1999; Gersten & Carnine, 1986; Vallecorsa & de Bettencourt, 1997).**

National Inquiry into the Teaching of Literacy (2005). Teaching reading - A review of the evidence-based research literature on approaches to the teaching of literacy, particularly those that are effective in assisting students with reading difficulties. *Australian Government: Department of Education, Science and Training*. Retrieved November 1, 2007, from www.dest.gov.au/nitl/documents/literature_review.pdf.

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**Beginning primary teachers are not confident about teaching specific aspects of literacy such as spelling, grammar and phonics.**
Louden, W., Rohl, M., Gore, J., Greaves, D., Mcintosh, A., Wright, R., Siemon, D., & House, H. (2005b). *Prepared to teach: An investigation into the preparation of teachers to teach literacy and numeracy.* Canberra, ACT: Australian Government Department of Education, Science and Training.

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**Whole-language theorists recommended repeated reading of texts with young children (e.g., Holdaway, 1979). However, the research evidence from this procedure has been limited and has been confounded by the type of text that whole-language theorists recommended for this activity— predictable text. Available evidence suggests that many beginning readers may repeat the words in predictable texts but they may be overrelying on their aural memory, rather than attending to the written words (Johnston, 2000).**
Hiebert, E.H., & Fisher, C.W. (2006). Fluency from the first: What works with first graders. In T. Rasinski, C.L.Z. Blachowicz, & K. Lems (Eds.), Teaching reading fluency: Meeting the needs of all readers (pp. 279-294). New York: Guilford Press.

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**Eye exercises have been purported to improve a wide range of conditions including vergence problems, ocular motility disorders, accommodative dysfunction, amblyopia, learning disabilities, dyslexia, asthenopia, myopia, motion sickness, sports performance, stereopsis, visual field defects, visual acuity, and general well-being. A 2005 review of 43 studies indicated that there is no clear scientific evidence published in the mainstream literature supporting the use of eye exercises … and therefore their use remains controversial.**
Rawstron, J., Burley, C., & Elder, M. (2005). A systematic review of the applicability and efficacy of eye exercises. *J Pediatr Ophthalmol Strabismus, 42*(2), 82-8.

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**According to Vivien Rutter, a Springvale behavioural optometrist, behavioural optometrists believe that physiotherapy, osteopathy, Alexander Technique, Reiki, even counselling can assist with improving vision.**
Robertson, J. (2007). Sunday Age 14/10/2007. P. 14

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**Approximately 22.9 new unique words appear per every 100 words in the 2007 copyright of an American mid first-grade textbook. In 1962, the rate in this same program was 7.4.**
Hiebert, E.H., & Martin, L.A. (2008). Repetition of words: The forgotten variable in texts for beginning and struggling readers. In E.H. Hiebert & M. Sailors (Eds.), Finding the right texts for beginning and struggling readers: Research-based solutions. NY: Guilford.

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**A group of first graders who were administered a battery of reading tasks in a previous study were followed up as 11th graders. Ten years later, they were administered measures of exposure to print, reading comprehension, vocabulary, and general knowledge. First grade reading ability was a strong predictor of all of the 11th grade outcomes, and remained so even when measures of cognitive ability were partialled out.**
Cunningham, A. E., & Stanovich, K. E. (1997). Early reading acquisition and its relation to reading experience and ability 10 years later. *Developmental Psychology*, *33*, 934-945.

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**The main prediction of the timing hypothesis, that disabled readers will be impaired on tasks with rapid but not slow processing demands, was not confirmed. Correspondingly, despite the evidence of deficient phonological processing vis-à-vis reading level control children, disabled readers showed**

**faster processing speeds than reading-level controls. Because disabled readers' slower speed of processing and poorer performance on timing measures could not be explained by specific deficit models, it is implausible that they underlie the phonological core deficit characteristic of reading disability.**

Chiappe, P., Stringer, R., Siegel, L. S., & Stanovich, K. E. (2002). Why the timing deficit hypothesis does not explain reading disability in adults. *Reading and Writing: An Interdisciplinary Journal*, *15*, 73-107.

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**Empirical work and theoretical speculation has raised the possibility that the ability to form, store, and access orthographic representations may be able to account for some of the residual variance in word recognition skills not explained by phonological factors (Barker, Torgesen, & Wagner, 1992; Cunningham & Stanovich, 1990, 1993; Stanovich & West, 1989) and that these two sources of variance contribute differentially to reading difficulties (Castles, Datta, Gayan, & Olson, 1999; Manis, Custodio, & Szeszulski, 1993; Stanovich, Siegel, & Gottardo, 1997; Treiman, 1984).**

Cunningham, A. E., Perry, K., Stanovich, K. E., & Share, D. L. (2002). Orthographic learning during reading: Examining the role of self-teaching. *Journal of Experimental Child Psychology*, *82*, 185-199.

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**"In a position paper on reading and phonics released by the English Teachers Association of NSW in July, it suggests a child reading the sentence "The car drove along the s..... at high speed" could guess it says street because the word starts with s.**

**"If the child said road, the paper says, the teacher will "have to weigh up whether to take the student back to the word" to read it correctly. "They may NOT because they recognise that meaning is most important, that we ALL make such mistakes EVERY time we read, and that this mistake shows that the child understands what they are reading," the paper says.**"

Ferrari, J. (2007). Teacher failures spell student trouble. *The Australian,* 17/9.

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**Children from poor homes are up to 9 months behind their peers before they even get to school. This gap in achievement widens at every stage from then on, and by age 14 are as much as two years behind.**

Hirsch, D. (2007). *Chicken and Egg: Child Poverty and Educational Inequalities*. London, UK: Campaign to End Child Poverty. Retrieved September 14, 2007, from http://www.endchildpoverty.org.uk/index.html

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**"… a strategic approach would be to teach ten letter-sound relations and the skill of sounding out words. When students have learned these ten sounds and the sounding-out skill, they can read 720 words made up of three sounds (e.g., *cat*), 4,320 words of four sounds (e.g., *cram*), and 21,600 words of five sounds (e.g., *scram*) for a total of over 25,000 words. Not all of these words would be real words, some would be pseudowords (e.g., *blums*), but the example illustrates the power of strategic instruction."**

Becker, W. C. (1971). *An empirical basis for change in education.* Chicago, Ill: Science Research Associates.

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**The disadvantaged three-year-olds have vocabularies of about 525 words, and their advantaged peers have vocabularies of just over 1,100 words.**

Hart, B., & Risley, T.R. (2003, Spring). The early catastrophe: The 30 million word gap. *American Educator*, p. 4-9.

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**"We know how reading is acquired," says Louisa Cook Moats, a protégée of Jeanne Chall's at Harvard and director of the NICHD's Early Reading Interventions project from 1997 to 2001. "It's learning to process very specific kinds of linguistic information and build networks that coordinate phonological processing to the patterns of printed symbols that the eye sees, and it's also connected to meaning and the building of vocabulary. When I explain how the process works to teachers, I compare it to an unraveled rope with the strands sticking out. The strands are all those beginning**

**skills to be woven together in the rope." Reading looks automatic and natural, Moats explains, but only because skilled readers are practiced enough to decode the symbols at lightning speed.**

Allen, C. (2007). Read it and weep: Why does Congress hate the one part of No Child Left Behind that works? *Weekly Standard, 12*(41), 16/7/2007. Retrieved July 12, 2007, from http://www.weeklystandard.com/Utilities/printer_preview.asp?idArticle=13850&amp;R=1143716CE7

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**In a series of vocabulary tests, the three-year-old sons and daughters of graduate parents were found to be 10 months ahead of those from families with few educational qualifications; they were 12 months ahead in their understanding of colours, letters, numbers, sizes and shapes.**

Carvel, J. (2007). Class divide hits learning by age of three. The Guardian 11/6/2007 http://education.guardian.co.uk/schools/story/0,,2100041,00.html

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**This longitudinal study of 105 economically disadvantaged children examined the relation between reading problems and internalizing behavior in 3rd- and 5th-grade assessments (8- to 12-year olds). The variable-centered results showed that reading problems predicted change in internalizing behavior in the context of child and family predictors. The person-centered results showed that children with reading problems in both grades had higher internalizing scores in 5th grade but not in 3rd grade than children with reading problems in 3rd grade or no problems. Child-reported negative emotion experiences varied similarly across grade. The results tie reading problems to emotional distress in school and support conclusions about the direction of effects and the internalization of academic difficulty for disadvantaged children.**

Ackerman, B. P., Izard, C. E., Kobak, R., Brown, E. D., & Smith, C. (2007). Relation between reading problems and internalizing behavior in school for preadolescent children from economically disadvantaged families. *Child Development, 78,* 581-596.

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**Only 37.5 per cent of the surveyed parents believed that students were leaving school with adequate skills in literacy.**

**83.5 per cent of parents highlighted 'Grammar, spelling and punctuation' as 'very important'.**

**As with a similar survey conducted in 2003, parents saw national consistency issues as important, with the majority regarding the following issues as 'important/very important':**

- **National standards for teachers and school leaders (93.0 per cent)**
- **Standard process for recognising skills of students when they move from one State or Territory to another (88.0 per cent);**
- **Model curriculum across all States and Territories (86.1 per cent);**
- **Standard tertiary entrance requirements for VET and higher education across all States and Territories (86.2 per cent):**
- **Standard school leaving age across all States and Territories (76.3 per cent); and**
- **National eligible school starting age (68.2 per cent).**

**Overall, parents placed more importance on these issues in 2007 than in 2003. Also, parents' views on national consistency were similar for parents of children who attended government and non-government schools**

Department of Education, Science and Training. (2007). *Parents' attitudes to schooling*. Canberra: Australian Government.http://www.dest.gov.au/NR/rdonlyres/311AA3E6-412E-4FA4-AC01-541F37070529/16736/ParentsAttitudestoSchoolingreporMay073.rtf

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**Lack of ability to accurately recognize many words that occur in grade-level text (limited "sight word" vocabulary) also limits these children's reading *fluency*. In fact, recent research has demonstrated that the primary factor that limits struggling readers' fluency is the high proportion of words in grade-level text that they cannot recognize at a single glance (Jenkins, Fuchs, van den Broek, Espin, and Deno, 2003; Torgesen and Hudson, 2006; Torgesen, Rashotte, and Alexander, 2001). Problems with reading fluency are emerging as one of the most common and difficult to remediate traits of older struggling readers (Torgesen & Hudson, 2006). For example, a recent study of the factors associated with unsatisfactory performance on one state's third-grade reading accountability measure—a measure of comprehension of complex text—found that students reading**

**at the lowest of five levels on the test had reading fluency scores at the 6th percentile (Schatschneider et al. 2004).**

Torgesen, J., Myers, M., Schirm, A., Stuart, E., Vartivarian, S., Mansfield, W., Stancavage, F., Durno, D., Javorsky, R., & Haan, C. (2006). *National Assessment of Title I Interim Report to Congress: Volume II: Closing the Reading Gap, First Year Findings from a Randomized Trial of Four Reading Interventions for Striving Readers.* Washington, DC: U.S. Department of Education, Institute of Education Sciences.

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**Some eye-movement studies have used homophones to demonstrate that the process of sounding out words mentally begins very rapidly after a reader's gaze first fixes on a particular word. And recent brain studies show that the primary motor cortex is active during reading, presumably because it is involved with mouth movements used in reading aloud. The process of mentally sounding out words is an integral part of silent reading, even for the highly skilled.**

Rayner, K., Foorman, B.R., Perfetti, C.A., Pesetsky, D., & Seidenberg, M.S. (2002, March). How should reading be taught? *Scientific American, 286*, 84-91.

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**The subvocalization process used for rehearsal is also thought to allow recoding of visually presented verbal information into a form suitable for storage, whereas auditory-verbal information is assumed to have obligatory and direct access to the phonological store.**

Paulesu, E., Frith, C. D., & Frackowiak, R. S. (1993). The neural correlates of the verbal component of working memory. *Nature, 362*(6418), 342-345.

Awh, E., Jonides, J., Smith, E. E., Schumacher, E. H., Koeppe, R. A., & Katz, S. (1996). Dissociation of storage and rehearsal in verbal working memory: Evidence from positron emission tomography. *Psychological Science, 7*(1), 25-31.

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**Lower levels of education are associated with:**
**• Lower wages and greater financial insecurity: an early school leaver can expect to earn approximately $500,000 less in the course of their working life than someone who completes Year 12**
**• Poorer mental and physical health: Victorians who do not complete secondary school are almost four times more likely to report poorer health**
**• A higher likelihood of child abuse and neglect when early leavers become parents**
**• Higher instances of homelessness, drug and alcohol abuse and criminal activity**
**• Mortality rates up to nine times higher than the general population** (Chapman, Weatherburn, Kapuscinski, Chilvers & Roussel, 2002; Department of Premier and Cabinet, 2005; Long, 2005; Vinson, 2004a).

Chapman, B., Weatherburn, D., Kapuscinski, C.A., Chilvers, M., & Roussel, S. (2002). Unemployment Duration, Schooling and Property Crime. Centre for Economic Policy Research. Canberra: Australia National University.

Department of Premier and Cabinet. (2005). Better outcomes for disengaged young people: Initial scoping, analysis and policy review.

Long, M. (2005). How young people are faring: Key indicators 2005. Sydney: Dusseldorp Skills Forum.

Vinson, T. (2004). Community adversity and resilience: The distribution of social disadvantage in Victoria and New South Wales and the mediating role of social cohesion. Melbourne: The Ignatius Centre for Social Policy and Research, Jesuit Social Services.

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**Even skilled adult readers progressively lose conscious graphophonemic awareness with age, and that this does not necessarily imply that they have never had it (Scarborough, Ehri, Olson, & Fowler, 1998).**

Scarborough, H.S., Ehri, L.C., Olson, R.K., & Fowler, A.E. (1998). The fate of phonemic awareness beyond the elementary school years. *Scientific Studies of Reading, 2*, 115–142.

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**Phoneme deletion (one of the two tasks used by Morais et al., 1979) has been shown to be a highly reliable and valid measure of phonemic awareness (Wood & Terrell, 1998a; Yopp, 1988)**

Morais, J., & Cary, L., Alegria, J., & Bertelson, P. (1979). Does awareness of speech as a sequence of phones arise spontaneously? *Cognition, 7*, 323–331.

Wood, C., & Terrell, C. (1998a). Pre-school phonological awareness and subsequent literacy development. *Educational Psychology, 18*, 253–274.

Yopp, H.K. (1988). The validity and reliability of phonemic awareness tests. *Reading Research Quarterly, 23*, 159–177.

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**"…50 percent of the Australian community have considerable difficulty reading, 35 percent can read but not possibly turn it into value or knowledge, leaving only 17 percent fully literate**…"
The Australian Bureau of Statistics study (Aspects of Literacy, Assessed Skill Level, Australia, 1996 (Cat. no. 4228.0)

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**By the age of 8 years the correlation between spelling ability and reading achievement is of the order of .89 to .92, suggesting a very close (but not perfect) association between the two processes (Westwood, 1973) (p. 18).**
Westwood, P.S. (2005). Spelling: Approaches to teaching and assessment (2nd ed.). Camberwell, Victoria: ACER Press.

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**There are some things that we think of as completely obvious concepts, like the word 'word'. What can be more obvious than that? But we know this, to a large extent, because we have in our mind's eye a word written, with spaces on either side of it. But in some languages which have never been written, it turns out it's not at all always obvious what a word is.**
Dr. Guy Deutscher in The Evolution of Language, Children of the Code interview, 2007.
http://www.childrenofthecode.org/interviews/deutscher.htm

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**Reading First focuses on core reading programs in grades K-3. There are only two programs widely acknowledged to have strong evidence of effectiveness in this area: Success for All and Direct Instruction.**
Slavin, R.E. (2007). Statement of Robert E. Slavin, Director Center for Data-Driven Reform in Education. Committee on Appropriations Subcommittee on Labor, Health and Human Services, Education, and Related Activities. Hearings on Implementation of No Child Left Behind. March 14, 2007. Retrieved March 16, 2007, from http://www.ednews.org/articles/8996/1/Statement-of-Robert-E-Slavin-Director-Center-for-Data-Driven-Reform-in-Education/Page1.html

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**The Premier's 10-year plan concedes that the overall performance of Victorian students in literacy lags the world's best. … The literacy revamp includes a stronger focus on phonics and phonemic awareness in the teaching of reading.**
Milburn, C. (2007). Schools 'slip behind' in basics. Education, The Age, p.3 5 March 2007

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**The whole language movement has been a major change agent and strength in the teaching of literacy over the last few decades.**
Turbill, J. (2002, February). The four ages of reading philosophy and pedagogy: A framework for examining theory and practice. *Reading Online, 5*(6). Retrieved March 2, 2007, from http://www.readingonline.org/international/inter_index.asp?HREF=turbill4/index.html

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**Compared with kindergarteners from families in the bottom fifth of the socioeconomic distribution (measured by a combination of parental education, occupation, and income), children from the top fifth of all families are four times more likely to have a computer in the home, have three times as many books in the home, are read to more often, watch far less television, and are more likely to visit museums or libraries (Lee and Burkam 2002).**
Lee, V.E., & Burkam, D.T. (2002. Inequality at the starting gate: Social background differences in achievement as children begin school. Economic Policy Institute, Washington, DC.

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Neuroplasticity - **the one thing we know about plasticity, which is the capacity to adjust and adapt, is it's greatest when the brain is immature, and it is less as the brain becomes more mature. It's never completely gone. There is plasticity in the brains of adults.**

So we do know that there are some functions that emerge, in terms of brain development, in critical periods. And the well described ones are in the sensory area, vision and hearing, to some extent. But **there has never been demonstrated in humans a critical period for anything related to cognition or emotional development or social development.** In a sensitive period, there isn't a time when the window closes and it's too late. But what it means is that **when you pass the sensitive period, it's harder for these things to develop in an adaptive way, or they may develop in a way that is not as efficient as it might be, and that you have to try to overcome later. Unlike a critical period where it's too late, missing a sensitive period means that it just gets harder as you get older, it's harder to get it right.**

So the messages that come out of that basic principle of brain development is that **getting things right the first time is better than trying to fix them later, trying to adapt to something that was not developed in the best way at the time that it was supposed to be developed.**

**So the sobering message here is that if children don't have the right experiences during these sensitive periods for the development of a variety of skills, including many cognitive and language capacities, that's a burden that those kids are going to carry; the sensitive period is over, and it's going to be harder for them. Their architecture is not as well developed in their brain as it would have been if they had had the right experiences during the sensitive period. That's the sobering message.**

**But there's also a hopeful message there, which is unlike a critical period where it's too late. The sensitive period says: It's not too late to kind of try to remediate that later. And you can develop good, healthy, normal competencies in many areas, even if your earlier wiring was somewhat faulty. But it's harder. It costs more in energy costs to the brain. The brain has to work at adapting to earlier circuits that were not laid down the way they should have been. And from a society's point of view, it costs more in terms of more expensive programming, more specialized help.**

Shonkoff, J.P. (2007). *The neuroscience of nurturing neurons.* Children of the Code. Retrieved March 1, 2007, from http://www.childrenofthecode.org/interviews/shonkoff.htm

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**On 8 February, 2007 the Federal Senate referred to the Employment, Workplace relations and Education Committee an inquiry into the quality of school education, with particular reference to processes and standards and attainments though progressive stages of schooling. The committee will also consider the adequacy of core curriculum and the standards of attainment required for higher education. The committee will report on 15 August 2007.** (Department of the Senate, PO Box 6100, Parliament House, Canberra)

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**MEDIA RELEASE 26 August 2005: National Accreditation of Pre-Service Teacher Education**
**Dr Gregor Ramsey, Chair of the Interim Board of the National Institute for Quality Teaching and School Leadership, announced today that work has commenced on developing a national system for the accreditation of pre-service teacher education.**
**The Australian Council for Educational Research (ACER) is being commissioned to evaluate current policies and practices for the approval of pre-service teacher education programs in Australia, examine developments in other countries, and analyse key issues in designing a national accreditation system.**
**"Unlike many other professions in Australia, there is no professional body accrediting teacher education at the national level," Dr Ramsey said. "A national accreditation system will provide a mechanism for the consistent appraisal of pre-service teacher education programs across Australia."**

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**The one social factor that researchers agree is consistently linked to longer lives in every country where it has been studied is education. It is more important than race; it obliterates any effects of income. Year after year, in study after study, says Richard Hodes, director of the National Institute on Aging, education "keeps coming up." A few extra years of school is associated with extra years of life and vastly improved health decades later, in old age.**

Kilata, G. (2007). A surprising secret to a long life: Stay in school. *New York Times,* January 3. Retrieved February 7, 2007, from
http://www.nytimes.com/2007/01/03/health/03aging.html?_r=1&hp=&oref=slogin&pagewanted=print

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**Across varying contexts, Direct Instruction, the Comer School Development Program, and Success for All have shown robust results and have shown that, in general, they can be expected to improve students' test scores. These three models stand out from other available comprehensive school reform (CSR) designs by the quantity and generalizability of their outcomes, the reliable positive effects on student achievement, and the overall quality of the evidence. … These clear, focused, and well-supported school-based models of improvement are in stark contrast to top-down direction and flexibility for educational reform.**

Borman, G. (2007). *Taking reform to scale*. Wisconsin Center for Educational Research Retrieved February 4, 2007, from http://www.wcer.wisc.edu/

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**For several decades, *whole language* has been the predominant teaching approach for early literacy learning (Westwood, 1999).**

**Essentially, the *whole language* approach reflects a constructivist philosophy in which students are viewed as inherently active, self-regulating learners who construct knowledge in developmentally appropriate ways. In the context of the classroom, students read and write self-selected whole texts in a dynamic atmosphere, with very little explicit decoding instruction (Goodman, 1986, 1989).**

Westwood, P. (1999). Constructivist approaches to mathematical learning: A note of caution. In D. Barwood, D. Greaves, & P. Jeffrey, *Teaching numeracy and literacy: Interventions and strategies for "at risk" students*. Coldstream, VIC: Australian Resource Educators' Association.

Rowe, K., Purdie, N., & Ellis, L. (2005). *A review of the evidence-based research literature on effective teaching and learning strategies for students with learning difficulties, especially in reading literacy. Canberra*: Australian Government Department of Education, Science and Training.

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**Most Australian university departments of education currently base their teacher education programs on constructivist views of teaching and learning. For example, Westwood (1999) highlighted the results of a small (N = 24) South Australian study which found that most teachers (79 percent) had been strongly encouraged to use a constructivist approach in their initial teacher-training courses and during in-service programs. Even more notably, 67 percent of the teacher trainees in this study indicated that constructivism was the *only* teaching approach to which they had been exposed in their methodological courses (Westwood, 1999). As emphasised by Westwood (2003b)**

**At the same time as constructivist approaches have been promoted, direct teaching methods have been overtly or covertly criticised and dismissed as inappropriate, with the suggestion that they simply don't work and are dull and boring for learners. The message that most teachers appear to have absorbed is that all direct teaching is old-fashioned and should be abandoned in favour of student-centred enquiry and activity-based learning. (p. 5)**

**Given that constructivism is currently the prevailing theoretical model of how learners come to know, it is useful to provide an overview of its basic principles together with a consideration of its appropriateness as a foundation for teaching students with learning difficulties.**

Westwood, P. (1999). Constructivist approaches to mathematical learning: A note of caution. In D. Barwood, D. Greaves, & P. Jeffrey, *Teaching numeracy and literacy: Interventions and strategies for "at risk" students*. Coldstream, VIC: Australian Resource Educators' Association

Westwood, P. (2003b). *Numeracy and learning difficulties: Approaches to teaching and assessment*. Camberwell, VIC: Australian Council for Educational Research.

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**Betty Hart and Todd Risley observed that by age 3, children of professionals had vocabularies of about 1,100 words while children whose parents were on welfare had vocabularies of 525 words. The average IQ among the professional children was 117, and the welfare children had an average IQ of 79.**

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**"The speed of naming pronounceable nonwords is one of the tasks that most clearly differentiates good from poor readers."**

Stanovich, K.E. (2000). *Progress in understanding reading: Scientific foundations and new frontiers*. New York: Guilford Press.

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**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.

**Oakhill**, J.V. and **Garnham**, A. (**1988**) Becoming a Skilled Reader. Oxford: Basil. Blackwell.

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**More suffer life-harm from illiteracy than from parental abuse, accidents, and all other childhood diseases and disorders *combined.***

Whitehurst, G. (2003). *Children of the Code interview: Evidence based education, science and the challenge of learning to read.* Retrieved January 11, 2004, from
*http://www.childrenofthecode.org/cotcintro.htm*

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**True research-based instruction, confirmed by multiple sources rather than a publisher's "data," is often weighted less by district decision-makers than are publisher sales pitches, political fads, etc.**

Anonymous post EducationNews.org

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**"Whereas first readers through the mid-1980's were exposed to 15 new words or less a week, first grades now are exposed to twice the number of new words per week -32. Through the mid-1980's, 14 of the 15 new unique words would be repeated frequently - approximately 20 times each in the first 10 passages - and only one of the new words would be a singleton. For beginning readers in Texas in 2000, 13 of the 32 new words appear only once, and another 9 occur two or three times, typically in the same passage (p.37)**

Hiebert E.H. (2002) State reform policies and the task for first grade readers. Manuscript submitted for publication. http://www.textproject.org/

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**The proportion of variance in student achievement that is explained by student SES (poverty's power rating) tends to be lower among smaller schools than among larger schools.**

Coladarci, T. (2006). School size, student achievement, and the "power rating" of poverty: Substantive finding or statistical artifact?. *Education Policy Analysis Archives, 14*(28). Retrieved [date] from
http://epaa.asu.edu/epaa/v14n28/.

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**Material studied for one semester or one year will be retained adequately for perhaps a year after the last practice (Semb, Ellis, & Araujo, 1993), but most of it will be forgotten by the end of three or four years in the absence of further practice. If material is studied for three or four years, however, the learning may be retained for as long as 50 years after the last practice (Bahrick, 1984; Bahrick & Hall, 1991). There is some forgetting over the first five years, but after that, forgetting stops and the remainder will not be forgotten even if it is not practised again.**

Bahrick, H. P. (1984). Semantic memory content in permastore: Fifty years of memory for Spanish learned in school. *Journal of Experimental Psychology: General, 113*, 1-29.

Bahrick, H. P. & Hall, L. K. (1991). Lifetime maintenance of high school mathematics content. *Journal of Experimental Psychology: General, 120*, 20-33.

Semb, G. B., Ellis, J. A., & Araujo, J. (1993). Long-term memory for knowledge learned in school. *Journal of Educational Psychology, 85*, 305-316.

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**Primary Framework for Literacy (2006)**
**English Primary Framework (2006)**
**Word recognition: decoding (reading) and encoding (spelling)**
**Most children learn to:**
- **read fluently and automatically by using phonic knowledge of grapheme-phoneme correspondences and the skills of blending as their prime approach for decoding unfamiliar words, and thereby:**
- **build up a store of words that are instantly recognised and understood on sight**
- **segment words into their constituent phonemes and understand that spelling is the reverse of blending phonemes into words for reading.**

http://www.standards.dfes.gov.uk/primaryframeworks/literacy/learningobjectives/Strands/Wordreadingskillsandstrategi/

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**A lack of learning in any particular situation should first be interpreted as a result of the inappropriate or insufficient use of teaching strategy rather than an inability on the part of the learner (p. 15).**

Gold, M. (1980). *"Did I say that?"* Champaign, IL: Research Press.

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**These children thus have an increased lifetime risk for a broad range of psychiatric disorders (Esser, Schmidt, & Woerner, 1990), and particularly depressive disorders and Posttraumatic Stress Disorder (McNulty, 2003). For example, when compared to other pupils, college students with learning disabilities were found to be nearly three times more likely to have depressive illness, and have more problems with their grades and quality of their coping skills (Arnold, 2000). Even when the consequences of learning disabilities such as harsh self-appraisal do not merit psychiatric diagnoses, children and adults with learning disabilities can still experience diminished confidence in the efficacy of their own academic, cognitive, and occupational efforts, having internalized repeated exposure to frustration (Cummings, Maddux, & Casey, 2000). As members of the adult workforce, those with learning disabilities are more likely to experience unemployment, or underemployment, and to earn less than non-disabled adults (Cummings et al., 2000). Even among adults who possess college degrees, routine workplace demands can prove more difficult for employees with learning disabilities than for their coworkers, diminishing their productivity and value to employers (Dickenson & Verbeek, 2002).**

Lange, S.M., & Thompson, B. (2006). Early identification and interventions for children at risk for learning disabilities. *International Journal of Special Education, 21*(3), 108-119. Retrieved October 19, from http://www.internationalsped.com/documents/92%20Lange.doc

**Proficient readers seem unconsciously to use initial letters plus prior knowledge and context to predict what a word might be, before focusing on more of the word or the following context to confirm or correct. This strategy seems to come naturally for many children, but others may need instructional assistance in first using the strategy consciously.**

**"First, have faith in children as learners." They can and usually will develop a grasp of letter/sound relationships with little direct instruction, just as they learned to talk without direct instruction in the rules of the English language.**

**(2) by repeatedly encouraging children to think "what would make sense here" before trying to sound out a word.**

Weaver, C. (1995). *Phonics in whole language classrooms*. Bloomington IN: ERIC Clearinghouse on Reading English and Communication. Retrieved October 17, from http://www.ericdigests.org/1995-1/phonics.htm

**"Bishop says the PISA tests highlight serious gaps in Australian standards, with 30 per cent of Australian students failing to reach the standard of literacy that would be required to meet the demands of lifelong learning."**

Livingstone, T. (2006, 14 Oct). Rating the system. *The Courier Mail*, p.53.

**Since comparatively few young adults in OECD countries have not acquired technical reading skills, PISA does not seek to measure such things as the extent to which 15-year-old students are fluent readers or how well they spell or recognise words. In line with most contemporary views about reading literacy, PISA focuses on measuring the extent to which individuals are able to construct, expand and reflect on the meaning of what they have read in a wide range of texts common both within and beyond school (p.279).**

Organisation for Economic Co-operation and Development (2004). *Learning for Tomorrow's World: First Results from PISA 2003*. Paris, France: Programme for International Student Assessment.

**A Roy Morgan poll published yesterday found 69 per cent of Australians supported a national curriculum. States and territory governments have opposed the plan.**
Bellamy, E. (2006, October 12). Undertrained maths teachers ill-equipped to inspire next generation: research. *Canberra Times*, p.3.

**Research proves that effective reading teachers know how students learn to read (acquisition), how to teach students to read (instruction), how to judge how well students read (assessment), and how to strengthen students' reading skills (remediation).**
Salvato, N. (2006). Battling the education hydra. EdNews.org.
http://www.ednews.org/articles/1877/1/Battling-the-Education-Hydra/Page1.html

**"When trouble is solved before it forms, who calls that clever**?" Sun Tzu

**I'm still trying to teach my kinesthetic learners how to change 1/9 into a decimal.**
NYC Math Teacher on blog
http://instructivist.blogspot.com/2006/02/revised-whole-language-golf.html#113917806617234699

Reading Recovery is used by 76 per cent of Victorian schools.

**(Teachers should) engage with the evidence-based research literature on what works for students with and without learning difficulties, and understand what constitutes *evidence*.**
National Inquiry into the Teaching of Literacy. (2005). *Teaching Reading - A review of the evidence-based research literature on approaches to the teaching of literacy, particularly those that are effective in assisting students with reading difficulties*. Australian Government: Department of Education, Science and Training. Retrieved 11 November, 2005, from www.dest.gov.au/nitl/documents/literature_review.pdf

**The effect of poor quality teaching on student outcomes is debilitating and cumulative. …The effects of quality teaching on educational outcomes are greater than those that arise from students' backgrounds. …A reliance on curriculum standards and statewide assessment strategies without paying due attention to teacher quality appears to be insufficient to gain the improvements in student outcomes sought. …The quality of teacher education and teaching appear to be more strongly related to student achievement than class sizes, overall spending levels or teacher salaries (Darling-Hammond, 2000, p. 3).**
Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. *Education Policy Analysis Archives, 8*(1); at: http://epaa.asu.edu/epaa/v8n1.

**Three-quarters of employers would be put off a job candidate by poor spelling or grammar, a survey suggests. Hertfordshire University found bad English alienated 77% of the 515 companies it spoke to - more than twice the 34% annoyed by CV exaggerations.**
BBC News. (2006). Bad spelling 'puts off employers'. BBC News. Friday, August 4. Retrieved, August 11, from http://news.bbc.co.uk/1/hi/education/5243098.stm

**Judging from the results of testing released this week by Educational Assessment Australia at the University of NSW, our schools are not doing the job. On the whole, our children don't spell English as well as Mandarin-speaking children in Singapore. … These results cannot be a surprise since we stopped serious teaching of spelling, grammar and sentence construction decades ago, with the consequence that most teachers cannot analyse errors in speech and writing.**
Wheeldon, J. (2006). Why teachers should be spellbound. The Australian, July 29. Retrieved, August 11, from http://www.theaustralian.news.com.au/story/0,20867,19941621-13881,00.html

**LESS than half of all Year 7 students could identify verbs or adjectives and only 7 per cent could spell "definitely" in a literacy test sat by all NSW students entering high school this year. NSW English Language and Literacy Assessment (2006) show that a majority of students have difficulty with spelling, punctuation and grammar.**

Ferrari, J. (2006). Words failing Year 7 students. *The Australian,* Aug 11. Retrieved, August 11, from http://www.theaustralian.news.com.au/story/0,20867,20077692-13881,00.html

**In 2005, the American Institutes for Research reviewed 800 studies of student achievement and of the 22 reform models examined, Direct Instruction and Success for All received the highest rating for quality and effectiveness**. http://www.csrq.org/reports.asp

**"Some people expect educational research to be like a group of engineers working on the fastest, cheapest, and safest way of traveling to Chicago, when in fact it is a bunch of people arguing about whether to go to Chicago or St. Louis."** *-- Gene Glass, former president of the American Educational Research Association* *http://www.illinoisloop.org/research.html*

**Texas standards are not grade-level specific, most of them are noise. They can't be measured and are just a bunch of fuzzy words**. Don McLeroy. How English is taught in Texas likely to change. Houston Chronicle July 4, 2006.

**These data reaffirm that among preliterate children, as among nonliterate adults, explicit awareness of phonemes is not acquired spontaneously and typically depends on explicit instruction in the alphabetic code (Bentin, Hammer, & Cahan, 1991; Bentin & Leshem, 1993; Bowey, 1994; Bowey & Francis, 1991; Liberman et al., 1974; Morais et al., 1987; Wallach & Wallach, 1979). … The current study adds to a growing body of evidence across a variety of languages that the special status of onset–rime units in children's early phonological awareness has been greatly exaggerated.**
Share, D.L., & Blum, P. (2005). Syllable splitting in literate and preliterate Hebrew speakers: Onsets and rimes or bodies and codas? *Journal of Experimental Child Psychology, 92*(2), 182-202.

**In scripts where at least some phonemes have alternative spellings, spelling accuracy indexes the strength of orthographic representations (Cunningham et al., 2002, Share, 1999; 2004). However, a spelling task is conservative in relation to reading in that it requires recall rather than recognition of orthographic information (Ehri & Saltmarsh, 1996).**
Bowey, J.A., & Muller, D. (2005). Phonological recoding and rapid orthographic learning in third-grade children's silent reading: a critical test of the self-teaching hypothesis, *Journal of Experimental Child Psychology, 92*, 203–219.

**These findings provide strong support for Share's (1995) self-teaching through phonological recoding hypothesis and add strength to claims regarding the central place of instruction in phonological recoding within the reading curriculum, particularly in beginners (Adams, 1990; Ehri et al., 2001).**
Bowey, J.A., & Muller, D. (2005). Phonological recoding and rapid orthographic learning in third-grade children's silent reading: a critical test of the self-teaching hypothesis, *Journal of Experimental Child Psychology, 92*, 203–219.

**… children's involvement in activities that led to practice in reading and writing most consistently predicted the development of emerging literacy skills, including understanding of the conventions of the English writing system. Little relation between print knowledge and the frequency of storybook reading by adults was observed. … prior to knowing how to read words, young children must closely examine the print and develop an understanding of written letters and how they encode words in the English writing system. This learning begins informally before instruction through encounters with print during the preschool years.**

**Finally, the study addressed the early experiences that relate to children's understanding of written English. Sénéchal and LeFevre, 2002 and Sénéchal et al., 1998 and Evans and colleagues (2000) showed that storybook reading relates to oral language development but not to written language development. Instead, parental coaching in printing, letter names and sounds, and reading is critical to the development of written language concepts. The current study offers clear support to these ideas. It was literacy activities in which the children actively participated with and focused on print**

(e.g., using letters, using alphabet books and picture dictionaries, printing, reading out loud, learning letter names) that best related to all of the emerging literacy skills, including the development of visual/orthographic skills.

Levy, B.A., Gong, Z., Hessels, S., Evans, M.A., & Jared, D. (2006). Understanding print: Early reading development and the contributions of home literacy experiences. *Journal of Experimental Child Psychology, 93*(1), 63-93.

This study investigated knowledge of letter names and letter sounds, their learning, and their contributions to word recognition. … children learned more easily to associate letters with sounds than with names. … Learning sounds facilitated later learning of the same letters' names, but not vice versa. Training either on names or on sounds improved word recognition and explanation of printed words.

Levin, I., Shatil-Carmon, S., & Asif-Rave, O. (2006). Learning of letter names and sounds and their contribution to word recognition. *Journal of Experimental Child Psychology, 93*(2), 139-165.

Current cognitive theory can be used to identify a number of methods for reducing working memory loads that could readily be applied to classroom practice (Gathercole & Alloway, 2004). For example, task instructions should be short and syntactically simple and should be repeated as required. In activities such as holding a sentence in mind while writing it down, the heavy storage and processing could be reduced by keeping sentences short and redundant and by using a highly familiar vocabulary. External memory aids, such as useful spellings and number lines, should be provided for children's use where possible, and children should be encouraged to practise them under conditions of low working memory load. Tasks with complex structures could be simplified into component parts as a means of reducing the burden of monitoring children's current place within the task. In addition, children might benefit from receiving training in self-help strategies for situations in which working memory fails.

Gathercole, S.E., Alloway, T.P., Willis, C., & Adams, A. (2006). Working memory in children with reading disabilities. *Journal of Experimental Child Psychology, 93*(3), 265-281.

The presence of significant unique associations between phonological processing skills and mathematics abilities in this sample is, however, worthy of note, and it is consistent with other evidence that skills in manipulating the phonological structure of language play an important role in both arithmetic computation skills (Hecht, Torgesen, Wagner, & Rashotte, 2001) and mathematical problem solving (Swanson & Sachse-Lee, 2001).

Gathercole, S.E., Alloway, T.P., Willis, C., & Adams, A. (2006). Working memory in children with reading disabilities. *Journal of Experimental Child Psychology, 93*(3), 265-281.

This prediction was made on the basis of our recent findings that children classified by their schools as having problems in both reading and mathematics had depressed performance on complex memory tasks, whereas individuals with difficulties restricted to reading did not (Pickering & Gathercole, 2004). Impairments of working memory deficits, therefore, appear to be associated with learning disabilities that extend beyond reading.

Gathercole, S.E., Alloway, T.P., Willis, C., & Adams, A. (2006). Working memory in children with reading disabilities. *Journal of Experimental Child Psychology, 93*(3), 265-281.

Behaviorally as well, more "effort" appears to be invested in decoding at the very first encounter with a novel string. When children read aloud the text passages in this study, the letter-by-letter sounding out and blending observed on the initial encounter with a new target would typically be replaced by a smooth uninterrupted pronunciation by the second or third exposure. … Clearly, there are also practical implications of single-trial learning. If "first impressions" are indeed the most potent, a decoding (or spelling) error on the very first attempt at a new word should be more detrimental to long-term orthographic learning than should an error committed at a later point. The common classroom practice of ignoring spelling errors in the early written products of beginning readers (when the primary focus of learning and instruction is the acquisition of the alphabetic

**principle and/or communicative intent) suggests that greater effort might need to be expended later to alter faulty orthographic representations created at the initial encounters with novel words.**

Share, D. (2004). Orthographic learning at a glance: On the time course and developmental onset of self-teaching. *Journal of Experimental Child Psychology 87*(4), 267-298.

**To acquire representations of printed words, children must attend to the written form of a word and link this form with the word's pronunciation. When words are read in context, they may be read with less attention to these features, and this can lead to poorer word form retention. Two experiments with young children (ages 5–8 years) confirmed this hypothesis. … We believe that the benefit of learning a new word form in isolation is caused by increased attention to the word's orthographic and phonological representations that is necessary for encoding. When beginning readers read words in context, they may fail to attend sufficiently to orthographic and phonological features of the words and instead rely on context to bolster their reading of unfamiliar words. Less skilled readers benefited from learning in the isolated condition to a greater extent than did more skilled readers. … young readers, while they are in the early stages of learning to read many new words, can benefit from reading that draws attention to word form and word decoding (e.g., the fingerpoint reading technique used by Ehri & Sweet, 1991). We do not, however, suggest that isolated word learning should replace learning words in stories; rather, we suggest that it should complement such learning, especially for less skilled and beginning readers.**

Landi, N., Perfetti, C.A., Bolger, D.G., Dunlap, S. & Foorman, B.R. (2006). The role of discourse context in developing word form representations: A paradoxical relation between reading and learning. *Journal of Experimental Child Psychology, 94*(2), 114-133.

**Right posterior inferior temporal sulcus in hyperlexic reading**
**This extra-striate region has been implicated in visual form recognition (Tanaka, 1997), and our normative developmental study revealed that children developmentally disengage this area over the course of reading acquisition (Turkeltaub et al., 2003). Young children probably recruit these right extrastriate regions for early phases of reading, during which they use visual patterns or visual context to recognize words (e.g., a small word with a tail is "dog," a word in a red hexagonal sign is "stop") (Ehri, 1999; Frith, 1985; Hoien and Lundberg, 1988). Then, these areas are likely disengaged as children rely more on letter-to-sound correspondences and less on visual configural analysis to identify words. … the fMRI data do not support a memory-based mechanism for reading**

Turkeltaub, P.E., D. L. Flowers, A. Verbalis, M. Miranda, L.Gareau & G.F. Eden (2004). The neural basis of hyperlexic reading: an fMRI case study. *Neuron, 41*, 1-20.

**Most people are right-handed and have a larger temporal plane in the left hemisphere of the brain, called left asymmetry. Left-handed people are more likely to have a larger temporal plane in the right hemisphere of the brain. In right-handed children, leftward brain asymmetry was related to strong recognition of speech sounds, and rightward asymmetry was related to poor recognition of speech sounds. Left-handed children with left asymmetry were at risk for reading failure.**

Eckert, M., Leonard, C., & Lombardino, L. (1998). *Brain structure may play role in children's ability to learn to read*. Paper presented at annual meeting of the Society for Neuroscience in Los Angeles on Nov. 9, 1998.

**The authors confirmed a relationship between lower motor ability and poor reading performance. However, the genetic effects on motor skill and reading ability appeared to be largely or wholly distinct, suggesting that the correlation between these traits may have arisen from environmental influences. Finally, the authors found no evidence that reading disability and/or low general cognitive ability were associated with ambidexterity.**

Francks, C., Fisher, S.E., Marlow, A.J., MacPhie, L., Taylor, K.E., Richardson, A.J., Stein, J.F., & Monaco, A.P. (2003). Familial and genetic effects on motor coordination, laterality, and reading-related cognition *American Journal of Psychiatry, 160*, 1970-1977.

**Research in education finds that students' assessments of their performance tend to agree only moderately with those of their teachers and mentors. Students seem largely unable to assess how**

**well or poorly they have comprehended material they have just read. They also tend to be overconfident in newly learned skills, at times because the common educational practice of massed training appears to promote rapid acquisition of skill—as well as self-confidence—but not necessarily the retention of skill. Several interventions, however, can be introduced to prompt students to evaluate their skill and learning more accurately.**
Dunning, D., Heath, C., &. Suls, J.M. (2004). Flawed self-assessment: Implications for health, education, and the workplace. *Psychological Science in the Public Interest, 5*(3), 69.

**Functional MRI scans have shown that the area specifically activates when people read, as opposed to recognizing other objects, such as faces or houses. And people with lesions in the region lose the ability to recognize whole words--reduced to letter-by-letter reading.**
Gaillard et al. (2006). Direct intracranial fMRI and lesion evidence for the causal role of left inferotemporal cortex in reading. *Neuron, 50*, 191-204.

**The philosophy behind the core (curriculum) is that educated people are not those who have read many books and have learned many facts, but rather those who could analyze facts if they should ever encounter any, and who could 'approach' books if it were ever necessary to do so ." … "One cannot think like a physicist, for example, without actually knowing a great deal of physics."**
Nelson, C. (1990). Harvard's hollow core. The Atlantic Monthly

**"After mastering decoding, a student who reads widely can indeed, under the right circumstances, gain greater knowledge and thence better reading comprehension. But such gains will only occur if the student already knows enough to comprehend the meaning of what he or she is decoding! Many specialists estimate that a child or an adult needs to understand around 90 percent of the words in a passage in order to learn to understand the other 10 percent of the words . Moreover, it's not just the words that the student has to grasp the meaning of; it's also the kind of reality that the words are referring to. When a child doesn't understand those word meanings and those referred-to realities, being good at sounding out words is a dead end."** (p. 25)
Hirsch, E.D. (2006). The knowledge deficit. Houghton Mifflin.

**"Cognitive psychologists have determined that when a text is being understood, the reader (or listener) is filling in a lot of the unstated connections between the words to create an imagined situation model based on domain-specific knowledge...To understand language, whether written or spoken, we need to construct a situation model consisting of meanings construed from the explicit words of the text as well as meanings inferred or constructed from relevant background knowledge. The spoken and the unspoken taken together constitute the meaning. Without this relevant, unspoken background knowledge, we can't understand the text."** (p. 38). Hirsch, E.D. (2006). The knowledge deficit. Houghton Mifflin.

**"The two ideologies or philosophies that dominate in the American educational world, which tend to corrupt scientific inferences, are naturalism and formalism. Naturalism is the notion that learning can and should be natural and that any unnatural or artificial approach to school learning should be rejected or deemphasized. This point of view favors many of the methods that are currently most praised and admired in early schooling - 'hands-on learning,' 'developmentally appropriate practice,' and the natural, whole-language method of learning to read. By contrast, methods that are unnatural are usually deplored, including 'drill,' 'rote learning,' and that analytical, phonics approach to teaching early reading. We call such naturalism an ideology rather than a theory because it is more a value system (based on the European Romantic movement) than an empirically based idea. If we adopt this ideology, we know in advance that the natural is good and the artificial is bad. We don't need analysis and evidence; we are certain, quite apart from the evidence, that children's education will be more productive if it is more natural. If the data do not show this, it is because we are using the wrong kinds of data, such as scores on standardized tests. That is naturalism.**

**"Formalism is the ideology that what counts in education is not the learning of things but rather**

learning how to learn . What counts is not gaining mere facts but gaining formal skills. Along with naturalism, it shares an antipathy to mere facts and the piling up of information. The facts, it says, are always changing. Children need to learn how to understand and interpret any new facts that come along. The skills that children need to learn in school are not how to follow mindless procedures but rather to understand what lies behind the procedures so they can apply them to new situations. In reading, instead of learning a lot of factual subject matter, which is potentially infinite, the child needs to learn strategies for dealing with any texts, such as 'questioning the author,' 'classifying,' and other 'critical thinking' skills." (p. 135)
Hirsch, E.D. (2006). The knowledge deficit. Houghton Mifflin.

**Direct Instruction was rated as one of just two programs of 22 total reform models showing evidence of positive effects on student achievement in a study by the American Institutes for Research's Comprehensive School Reform Quality Center, funded by the U.S. Department of Education**
http://www.air.org/news/documents/Release200511csr.htm

**Phonological decoding made a significant unique contribution to reading comprehension for the eighth/ninth-grade group, to spelling for the fourth/fifth- and eighth/ninth-grade groups, and to the decoding rate and accuracy measures for all three groups, with only three exceptions**.
Nagy, W., Berninger, V.W., & Abbott, R.D. (2006). Contributions of morphology beyond phonology to literacy outcomes of upper elementary and middle-school students. *Journal of Educational Psychology, 98*(1), 134-147.

**Ramey and Ramey's (1998) review of the research literature in this area found that, in general, "interventions that begin earlier in development and continue longer afford greater benefits to participants than those that begin later and do not last as long" (p. 115).**
Ramey, C. T. & Ramey, S. L. (1998). Early intervention and early experience. *American Psychologist*, 53, 109-120.

**FSIQ accounts for 32% of the variance in reading comprehension and 8% of the variance in word recognition, whereas phonological awareness accounts for 20% and 39% of reading comprehension and word recognition respectively.**
Niolon, R. (2005). Introduction to the WAIS III. Resources for students and professionals. Retrieved 20/8/2005 from www.psychpage.com

**Could he be dyslexic or SEN (with special educational needs)? Not a bit of it: he is, to borrow an American acronym, ABT — ain't being taught.** Ruth Miskin

**The richest 5% of Australian students were on average at least three years of schooling ahead of the bottom 5% in reading literacy. The top 25% of students are at least 1.5 years ahead of the bottom 25% in reading literacy. But the OECD test results showed countries such as South Korea, Finland and Canada have education systems that ameliorate the differences in home background.**
Professor Barry McGaw, OECD Education Director in School system failing the poor, The Australian, 23/3/2006
http://www.theaustralian.news.com.au/common/story_page/0,5744,18571007%5E13881,00.html

**' one only has to scratch the surface of any criterion-referenced assessment system in order to find a norm-referenced set of assumptions lying underneath**
Angoff, W. H. (1974). Criterion-referencing, norm-referencing and the SAT. *College Board Review,* 92, 2-5)

**Error analyses indicated links between teachers' patterns of word structure knowledge and children's patterns of word decoding progress. The study suggests that word structure knowledge is important to effective teaching of word decoding and underscores the need to include this information in teacher preparation (p.332).**

Spear-Swerling, L. & Brucker, P.O. (2004). Preparing novice teachers to develop basic reading and spelling skills in children. *Annals of Dyslexia, 54*(2), 332-364.

**Learning disabled students who are performing below the 10th percentile on measures of reading, written expression, and math in elementary school demonstrate a leveling off at about 4th to 5th grade level, creating a considerable gap by the time they reach high school.**
Schumaker, J.B., & Deschler, D.D. (1988). Implementing regular education initiative in secondary schools: A different ballgame. *Reading & Writing: An Interdisciplinary Journal, 8*, 267-294.

**More research on the phenomenon of letter reversals is needed, especially when it occurs in children beyond first grade.**
Badian, N.A. (2005). Does a visual-orthographic deficit contribute to reading disability? *Annals of Dyslexia, 55*(1), 28-52.

**"Many students have difficulty not just in structuring a sentence, but in structuring paragraphs or essays as a whole," the report says. "They seem to have had very little experience of writing. In consequence, their essays are often incoherent not only at the level of the sentence but also in their overall argument. Absent, in many cases, is any sense of confident fluency, of knowing how to mount an argument, how to articulate it with clarity and consistency and how to see it through to a decent conclusion."**
The Royal Literary Fund study (2006) reported in
http://telegraph.co.uk/news/main.jhtml?xml=/news/2006/03/12/nwriting12.xml

**Literacy And Behavior**
**Poor literacy achievement in the first and third grades predicted relatively high aggressive behavior in the third and fifth grades, respectively.**

**Behavior problems were more strongly associated with reading achievement than with mathematics achievement in a sample of children in early elementary school (Adams, Snowling, Hennessy, & Kind, 1999).**

**Poor readers who were also identified as having behavioral problems in childhood were much more likely to drop out of school and to have unstable work patterns, low job skills, and delinquent behavior in adulthood than children with either behavior problems or poor reading skills in childhood (Maughan, Gray, & Rutter, 1985).**

**Academic skills could, however, also affect children's behavior. Children who have difficulty learning to read, for example, may become frustrated or unhappy in school and express their frustration and unhappiness by acting aggressively toward the teacher or classmates. This proposal is based on the basic notion that frustration (defined as the state that emerges when circumstances interfere with a goal response) leads to aggression (Dollard, Doob, Miller, Mowrer, & Sears, 1939). Berkowitz (1968) expanded the theory beyond simple frustration to posit that aggression can be the consequence of any unpleasant emotions and feelings, such as anxiety, anger, annoyance, or pain. This negative affect can trigger either "fight or flight." The theory has been tested in a variety of social psychological studies. Buss (1963), for example, had college students experience one of three types of frustration (failure to win money, failure to earn a better grade, or failure on a task). All three groups showed more subsequent aggression than a control group that was not frustrated. In another study, Berkowitz (1978) found that subjects who were frustrated by not being able to keep up with a confederate in a stationary bicycle competition (when the confederate's pedaling suddenly picked up speed) were more likely to punish their partners in a subsequent learning task than nonfrustrated subjects.**

**The negative effect of poor reading skills on children's behavior is likely to increase over the elementary grades for several reasons. Research on social comparison indicates that as children get older, they become more aware of their performance compared with peers and assess their relative**

**skills more accurately** (see Eccles, Midgley, & Adler, 1984, and Stipek & Mac Iver, 1989, **for reviews;** Wigfield et al., 1997). **As a consequence, poor skills should become more humiliating and a greater cause of anxiety and other negative emotions. Previous studies suggest that social comparison, particularly for the purposes of self-assessment of academic achievement, is well developed by the third grade** (Frey & Ruble, 1985; Pomerantz, Ruble, Frey, & Greulich, 1995). **Accordingly, we predicted that the association between literacy skills and aggression would be higher in the third and fifth grades than in the earlier grades. Studies have likewise found that poor academic skills predicted later aggression. For example, in a study of Australian children,** Jorm, Share, Matthews, and Maclean (1986) **found no differences in children's antisocial behavior in kindergarten as a function of reading skills, but the children with reading difficulties were significantly more antisocial than the normal readers by the end of grade 1 and in grade 2.** Williams and McGee (1994) **similarly found that boys with reading disabilities at age 9 were more likely to develop conduct disorder at age 15.** McGee et al. (1986) **found that children who were having considerable difficulty learning to read at the beginning of school already showed behavior problems; behavior problems increased from ages 5 to 9 at a much faster pace for children who had serious reading difficulties than for other children. In a longitudinal study of African American boys, IQ measured at age 7 (which was presumably associated with academic achievement) was a stronger predictor of conduct disorder at age 17 than was either aggression or parent psychopathology at age 7** (Schonfeld, Shaffer, O'Connor, & Portnoy, 1988).

Miles, S.B., & Stipek, D. (2006). Contemporaneous and longitudinal associations between social behavior and literacy achievement in a sample of low-income elementary school children. *Child Development*, *77*(1), 103-117.

**There is a robust association between reading achievement and antisocial behavior. This association was investigated using the Environmental Risk (E-Risk) Longitudinal Twin Study, a nationally representative 1994–1995 birth cohort of 5- and 7-year-olds. For boys the best explanation was a reciprocal causation model: poor reading led to antisocial behavior, and vice versa.**

Trzesniewski, K.H., Moffitt, T.E., Caspi, A., Taylor, A., & Maughan, B. (2006). Revisiting the association between reading achievement and antisocial behavior: New evidence of an environmental explanation from a twin study. *Child Development*, 77(1), 72-88.

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**Material read by high school students contain over 100,000 words (Nagy & Anderson, 1984). There is no way to teach that many. …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.

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**The plural of anecdote is not data.**

Alison Clarke, *Crikey Daily - 9 December 2005* http://www.crikey.com.au/articles/2005/12/09-0919-61.html

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**Hot Topic: The effects of state prekindergarten programs on young children's school readiness in five states** National Institute for Early Education Research

By W. Steven Barnett, Cynthia Lamy and Kwanghee Jung

December 2005 http://nieer.org/docs/index.php?DocID=129

**This NIEER study of high-quality prekindergarten programs in five states reveals significant improvement in children's early language, literacy and mathematical development, improvement far greater than found in a recent national study of the federal Head Start program.**

•       **Children who attended state-funded preschool showed gains in vocabulary scores that were about 31 percent greater than gains of children without the program. This translates into an additional three months of progress in vocabulary growth due to the preschool program at age 4.**

**This outcome is particularly important because the measure is strongly predictive of general cognitive abilities and later reading success, the researchers said.**

**·        State-funded preschool increased children's gains in math skills by 44 percent compared to children's growth without the program. Skills tested included basic number concepts, simple addition and subtraction, telling time and counting money.**

**State-funded preschool produced an 85 percent increase in growth in print awareness (knew more letters, more letter-sound associations, more familiar with words and book concepts) among children enrolled compared to growth of children without the program. Children who attended a state-funded preschool program before entering kindergarten.**

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**There may be rhetoric about the socially constructed nature of Western science, but wherever it matters there are no satellites based on feminist alternatives to quantum theory. Even that great public sceptic about the value of science, Prince Charles, never flies a helicopter burning homeopathically diluted petrol, that is, water with only a memory of benzine molecules, maintained by a schedule derived from reading tea leaves, and navigated by a crystal ball.** (p. 196)
Blackburn, S. (2005). Truth: A guide. New York: Oxford University Press.

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**Australia, Dec 2005. Recommendations of the Nelson Enquiry into the teaching of literacy**

1. The Committee recommends that teachers be equipped with teaching strategies based on findings from rigorous, evidence-based research that are shown to be effective in enhancing the literacy development of all children.

2. The Committee recommends that teachers provide **systematic, direct and explicit phonics instruction** so that children master the essential alphabetic code-breaking skills required for foundational reading proficiency. Equally, that teachers provide an integrated approach to reading that supports the development of oral language, vocabulary, grammar, reading fluency, comprehension and the literacies of new technologies.

3. The Committee recommends that literacy teaching continue throughout schooling (K-12) in all areas of the curriculum. Literacy must be the **responsibility of all teachers across the curriculum**, to provide an educationally sound program meeting the specific skill and knowledge needs of individual children from diverse backgrounds and locations.

4. The Committee recommends that programs, guides, and workshops be provided for **parents and carers** to support their children's literacy development. These should acknowledge and build on the language and literacy that children learn in their homes and communities.

5. The Committee recommends that all education authorities and school leaders examine their approaches to the teaching of literacy and put in place an explicit, **whole-school literacy planning,** monitoring and reviewing process in collaboration with school communities and parents.

6. The Committee recommends that all schools **identify a highly trained specialist literacy teacher** with specialised skills in teaching reading, to be responsible for linking the whole-school literacy planning process with classroom teaching and learning, and supporting school staff in developing, implementing and monitoring progress against individual literacy plans particularly for those children experiencing reading and literacy difficulties.

7. The Committee recommends that **specialist postgraduate studies in literacy** (especially in teaching reading) be provided by universities to support the skill base and knowledge of teachers, including the specialist literacy teachers.

8. The Committee recommends that the National Institute for Quality Teaching and School Leadership (NIQTSL), in consultation with relevant professional associations, employers from government, Catholic and independent school authorities, together with the State and Territory Institutes for Teaching, develop and implement **national standards for literacy teaching,** initial teacher registration, and for accomplished

teaching, consistent with evidence-based guides for practice. It is further recommended that these standards form a basis for the accreditation of teacher preparation courses.

9. The Committee recommends that the teaching of literacy throughout schooling be informed by comprehensive, diagnostic and developmentally appropriate assessments of every child, mapped on common scales. Further, it is recommended that: • nationally consistent assessments on-entry to school be undertaken for every child, including regular monitoring of decoding skills and word reading accuracy using objective testing of specific skills, and that these link to future • education authorities and schools be responsible for the measurement of individual progress in literacy by regularly monitoring the development of each child and reporting progress twice each year for the first three years of schooling; and • the Years 3, 5, 7 and 9 national literacy testing program be refocused to make available diagnostic information on individual student performance, to assist teachers to plan for the most effective teaching strategies.

10. The Committee recommends that a confidential mechanism such as a unique student identifier be established to enable information on an individual child's performance to follow the child regardless of location, and to monitor a child's progress throughout schooling and across assessment occasions.

11. The Committee recommends that the key objective of primary teacher education courses be to prepare student teachers to teach reading, and that the content of coursework in primary literacy education focus on contemporary understandings of: • evidence-based findings and an integrated approach to the teaching of reading, including instruction on how to teach phonemic awareness, phonics, fluency, vocabulary knowledge • child and adolescent development; and • inclusive approaches to literacy teaching.

12. The Committee recommends that literacy teaching within subject areas be included in the coursework of secondary teachers so that they are well prepared to continue the literacy development of their students throughout secondary schooling in all areas of the curriculum

13. The Committee recommends that significant national 'lighthouse' projects in teacher preparation and education be established to link theory and practice that effectively prepare pre-service teachers to teach literacy, and especially reading, to diverse groups of children.

14. The Committee recommends that the conditions for teacher registration of all primary and secondary graduates include a demonstrated command of personal literacy skills necessary for effective teaching, and a demonstrated ability to teach literacy within the framework of their employment/teaching program.

15. The Committee recommends that schools and employing authorities, working with appropriate professional organisations and higher education institutions, provide all teachers with appropriate induction and mentoring throughout their careers, and with on-going opportunities for evidence-based professional learning about effective literacy teaching.

16. The Committee recommends that a national program of literacy • *design* a series of evidence-based teacher professional learning programs focused on effective classroom teaching, and later interventions for those children experiencing reading • *produce* a series of evidence-based guides for effective teaching practice, the first of which should be on reading; • *evaluate* the effectiveness of approaches to early literacy teaching (especially for early reading) and professional learning programs • *investigate* ways of integrating the literacies of information and communication technologies with traditional literacies in the classroom• *establish* networks of literacy/reading specialist practitioners to facilitate the application of research to practice; and • *promote* research into the most effective teaching practices to be used when preparing pre-service teachers to teach reading.

17. The Committee recommends that Australian and State and Territory governments' approaches to literacy improvement be aligned to achieve improved outcomes for all Australian children.

18. The Committee recommends that the Australian Government, together with State and Territory government and non-government education authorities, jointly support the proposed national program for literacy action.

19. The Australian Government Minister for Education, Science and Training raise these recommendations as issues for attention and action by MCEETYA, and other bodies, agencies and authorities, that will have responsibility to take account of, and implement the recommendations.

20. Progress in implementing these recommendations, and on the state of literacy in Australia, be reviewed and reported every two years.

National Inquiry into the Teaching of Literacy (2005). Teaching reading - A review of the evidence-based research literature on approaches to the teaching of literacy, particularly those that are effective in assisting students with reading difficulties. *Australian Government: Department of Education, Science and Training*. Retrieved November 1, 2007, from www.dest.gov.au/nitl/documents/literature_review.pdf.

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**English vowels are misread twice as frequently as consonants (Fowler, Liberman, & Shankweiler, 1977).**
Fowler, C. A., Liberman, l. Y., & Shankweiler, D. (1977). On interpreting the error pattern of the beginning reader. *Language and Speech, 20,* 162-173.

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**80% of all words readers encounter have one or more affixes (Cunningham, 1998).**
Cunningham, P. M. (1998). The multisyllabic word dilemma: Helping students build meaning, spell, and read "big" words. *Reading and Writing Quarterly: Overcoming Learning Difficulties,* 14, 189-218.

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**"My statistical tabulation of the graphemes of /u/[(zoo)] has provide clear evidence for the chaotic graphemic abundance representing just this single phoneme. The phoneme-grapheme correspondences for English orthography are reflected in the following statistics: 40 phonemes represented by 1120 graphemes which occur in common words -- 882 of them in first-pronunciation variants" (Nyikos, 1988, p. 159). …. But there is no need to expose ANY student at ANY age to ANY of those words until a basic code and the alphabetic principle is well established.**
Nyikos, J. (1988). A linguistic perspective of functional literacy. *The fourteenth Lacus forum 1987*. Lake Bluff, Ill: S. Embleton.

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**Thouless Law of Certainty: "If statements are made again and again in a confident manner, then their hearers will tend to believe them quite independently of their soundness and of the presence or absence of evidence for their truth."**
Thouless, R.H. (1953). Straight and crooked thinking. London: Pan Books.

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**"For example, Direct Instruction (DI), a behaviorally oriented teaching procedure based on an explicit step-by-step strategy (ES=.93) is six-and-one-half times more effective than the intuitively appealing modality matched instruction (ES=.14) that attempts to capitalize on learning style differences.** Students with Specific Learning Disabilities who are instructed with DI would be better off than 87% of students not receiving DI **and would gain over 11 months credit on an achievement measure compared to about one month for modality matched instruction."**
Kavale K. (2005). Effective intervention for students with specific learning disability: The nature of special education. *Learning Disabilities*, *13*(4), 127-138.

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**Occurrences of oral reading errors, regardless of their effect on text meaning, were negatively related to comprehension … Speed of oral reading measured as words per minute for the entire passage was positively related to comprehension as measured by average score on the main NAEP assessment.**
Daane, M.C., Campbell, J.R., Grigg, W.S., Goodman, M.J., and Oranje, A. (2005). *Fourth-Grade Students Reading Aloud: NAEP 2002 Special Study of Oral Reading* (NCES 2006-469). U.S. Department of

Education. Institute of Education Sciences, National Center for Education Statistics. Washington, DC: Government Printing Office. Retrieved 5/11/2005 from http://nces.ed.gov/nationsreportcard/pdf/studies/2006469.pdf

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**" ...if you think you know the truth without having to collect any data, that saves a lot of time" (Stanovich, 2000, p. 382).**
Stanovich, K. E. (2000). Progress in understanding reading: Scientific foundations and new frontiers. New York: Guilford Press.

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**"Understanding more often than not follows doing rather than precedes it. If I'm going to teach you how to drive, I don't lecture you on the theory of the internal-combustion engine. I get you behind the wheel of the car and drive around the block."**
*John Saxon,* author of the Saxon Math books. Wave Publications "Where's the Evidence" Series Nov. 1995 http://www.robinsoncurriculum.com/view/rc/s31p655.htm#Message3339

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**"Teachers' effectiveness appears strongly related to the preparation they have received for teaching".**
Darling-Hammond, L., Holtzman, D. J., Gatlin, S. J., & Heilig, J. V. (2005, October 12). Does teacher preparation matter? Evidence about teacher certification, Teach for America, and teacher effectiveness. Education Policy Analysis Archives, 13(42). Retrieved [date] from http://epaa.asu.edu/epaa/v13n42/

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**"The collective results of our studies suggest that improvements in language abilities after FFW training did not result from changes in temporal processing. It is possible that similar improvements in language may be obtained from a variety of interventions that are presented on an intensive schedule, that focus the child's auditory and visual attention, that present multiple trials that vary task complexity as a function of response accuracy, and that reward progress."**
Looking back: A summary of five exploratory studies of Fast ForWord Ronald B. Gillam, Diane Frome Loeb, Sandy Friel-Patti
http://professional.asha.org/continuing_ed/loader.cfm?url=/commonspot/security/getfile.cfm&PageID=13678

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**"The most common type of reading problem for students with reading disabilities, or dyslexia, is their inability to accurately and fluently identify printed words" (p. 47)**
Allor, J. H. (2002). The relationship of phonemic awareness and rapid naming to reading development. *Learning Disabilities Quarterly, 25*, 47-57.

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**"To understand almost all speech that is intended for us, say the experts, the speech must be at least 15 decibels louder than other interfering sounds. Most classrooms exceed this level by 10 times".**
Milstone, C. (2005). *Classroom acoustics - Sometimes the answer to 'are you listening?' is 'I can't'.* Canadian Language and Literacy Research Network. Retrieved 20/9/2005 from http://www.cllrnet.ca/

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**"Halfon, Schulman & Hochstein (2001) acknowledge that brain development is the result of a complex interaction between nature and nurture and have presented a number of key findings that have "important implications for parenting, policy makers and efforts to support optimal brain development during early childhood" especially the finding that "a child's brain is changed by experience" (p. 2). Whereas brain centres that control critical survival functions such as breathing and heart rate are already sophisticated before birth, higher cortical functions that have to do with learning and memory are sculpted and modified by experience" (Halfon et al., 2001 p. 4). Gottlieb, Wahlsten and Lickliter (1998) similarly describe the brain as a "plastic self organising organ which develops and maintains nerve connections that are based on experiential demands and are not strictly predetermined". Learning is thus viewed as the process by which the brain responds adaptively to the environment in which a child is reared. Halfon et al (2001) describe the *use dependent* manner in which experiences that stimulate activity in particular regions of the brain facilitate the growth of connections in those regions".**

Gottlieb, G., Wahlsten, D., & Lickhter, R. (1998). The significance of biology for human development: A developmental psychobiological systems view. In W. Damon (Series Ed.) and R. Lerner (Vol. Ed.) Handbook of Child Psychology: Vol 1. *Theoretical models of human development* (pp. 233-273). New York: Wiley.

Halfon, N., Schulman, E., & Hochstein, M. (2001). Brain development in early childhood. In N. Halfon, E, Schulman, & M. Hochstein (Ed.), *Building community systems for young children* (pp. 1-24). UCLA Center for Healthier Children Families and Communities.

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• **One of the "The Nation's Report Cards" shows how U.S. students are doing in math and reading over time, starting from when the test was first administered in 1969. The latest results show some positive signs! The average reading score was higher in 2004 than in any previous year; the gender gap between boys and girls was smaller in 2004 than in 1971; the gap between African American and White students decreased from 44 points in 1971 to 26 points in 2004; and the gap between Hispanic and White students decreased from 34 points in 1975 to 21 points in 2004.**
• **Nine-year-olds. The average reading score was higher in 2004 than in any previous assessment year.**
• **Thirteen-year-olds. The average score in 2004 was higher than the average score in 1971, but no difference from the average score in 1999 was found.**
• **Seventeen-year-olds. There was no statistically significant difference between average scores in 1999 and 2004.**

National Center for Education Statistics (2005). *National Assessment of Educational Progress.* Washington, DC: Institute of Education Sciences, U.S. Dept. of Education. Retrieved 14/9/2005 from http://nces.ed.gov/nationsreportcard/ltt/results2004/nat-reading-scalescore.asp

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• **"First-grade students' growth in oral reading fluency (ORF) was predicted by their kindergarten letter-naming and letter-sound fluency using growth curve analysis.**
• **Both skills significantly predicted first-grade reading growth.**
• **Students who made limited growth in first-grade ORF produced only eight letter names per minute in kindergarten."**

Stage, S.A., Sheppard, J., Davidson, M.M., & Browning, M.M. (2001). Prediction of first-graders' growth in oral reading fluency using kindergarten letter fluency. *Journal of School Psychology, 9*(3), 225-237.

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**"(a) fluency instruction is generally effective, although it is unclear whether this is because of specific instructional features or because it involves children in reading increased amounts of text;**
**(b) assisted approaches seem to be more effective than unassisted approaches;**
**(c) repetitive approaches do not seem to hold a clear advantage over nonrepetitive approaches; and**
**(d) effective fluency instruction moves beyond automatic word recognition to include rhythm and expression, or what linguists refer to as the prosodic features of language."**

Kuhn, M.R., & Stahl, S.A. (2003). Fluency: A review of developmental and remedial practices. *Journal of Educational Psychology, 95*(1), 3-21.

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**2005**

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**"Eckert et al. (2003) report on the basis of MRI scans of dyslexic and control children, that rapid digit and digit-letter naming was specifically associated with reduced right cerebellar anterior lobe and left and right pars triangularis."**

Eckert, M. A., Leonard, C. M., Richards, T. L., Aylward, E. H., Thomson, J., & Berninger, V. W. (2003). Anatomical correlates of dyslexia: Frontal and cerebellar findings. *Brain, 126*, 482–494.

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**"The strongest single predictor of reading accuracy and comprehension was nonsense word reading. For reading rate, the strongest predictor was digit naming speed and vocabulary but picture naming speed was a very modest predictor of reading rate."**

**"Rapid alphanumeric naming is a highly specific predictor of reading rate. Rapid digit naming and phonological processing are distinct contributors to different aspects of reading in poor readers."**

Savage, R., & Frederickson, N. (2005). Evidence of a highly specific relationship between rapid automatic naming of digits and text-reading speed. *Brain and Language, 93*, 152–159.

**"Many children suffer adverse social and emotional outcomes, are at risk of mental health problems, and have a higher likelihood of delinquency and becoming part of the prison population (Brown, 1997; Jensen, Lindgren, Meurling, Ingvar & Levander, 1999)".**
Brown, P. (1997). Co-existence of behavioural problems and literacy problems in young male schoolchildren: some issues for consideration. *The Weaver: A Forum for New Ideas in Education,* (1), Retrieved 23/8/2005 from http://www.latrobe.edu.au/www/graded/PBed1.html
Jensen, J., Lindgren, M., Meurling, A.W., Ingvar, D.H., & Levander, S. (1999). Dyslexia among Swedish prison inmates in relation to neuropsychology and personality. *Journal of the International Neuropsychological Society, 5*, 452-61.

Steven Strauss (The Linguistics, Neurology and Politics of Phonics).
**'Can a group of 70,000 teachers and educators who have spent decades studying and debating all the complex issues in reading be converted overnight to an intensive phonics position? In the history of science, there is no precedent for such rapid change, even in the presence of overwhelmingly compelling empirical evidence. It takes time for professionals to restudy, redebate and digest. So, insofar as the classroom teaching of intensive phonics cannot be guaranteed by the internal conviction of teachers, it must, according to the government, be elicited by the external coercion of the state.'**

**In June 2005, the National Comorbidity Survey Replication study (supported by the National Institute of Mental Health and by health research foundations and pharmaceutical companies) reported findings from a retrospective study of the prevalence and severity of specific mental disorders of children and youth. The investigators conclude that: "About half of Americans will meet the criteria for a DSM-IV disorder sometime in their life, with first onset usually in childhood or adolescence.**
http://smhp.psych.ucla.edu/pdfdocs/prevalence/youthMH.pdf

**"Policy makers generally take little notice of most of the research that is produced and teachers take even less notice of it … He said the system should be overhauled to focus on greater relevance and an evidence-based approach to research, covering areas such as how to improve student learning and teacher skills**.
Professor Peter Cuttance, director of Melbourne University's Centre for Applied Educational Research, *Education research 'irrelevant'* in The Age, p.5, 2/7/2005

- **Almost half of parents do not read to their children daily.**
- **Two-thirds blamed a lack of time for preventing them from reading more to their child.**
- **Thirty-three per cent of parents with toddlers read for an average of 10 minutes or less a day to their child.**
Dymocks Literacy Foundation

**Twenty children with mental retardation (MR), age 7-12, completed a phonological reading skills program over approximately 10 weeks. As a result of the instruction, they were better able to sound out learned and transfer words compared to a control group matched on age, IQ, nonword reading, language comprehension, and phonemic awareness. Final sounding out was predicted by beginning reading skill in both groups, by phonemic awareness and articulation speed in the control group only, and by general language ability in the instruction group only. Neither IQ nor verbal working memory correlated significantly with final sounding out ability in either group. It is suggested that the instruction succeeded in compensating for weaknesses in phonemic awareness and speech articulation, but favored those who had better language skills.**
Conners, F.A., Rosenquist, C.J., Sligh, A.C., Atwell, J.A., & Kiser, T. (in press). Phonological reading skills acquisition by children with mental retardation. Research in Developmental Disabilities.

Background: A longitudinal study investigated the cognitive skills and scholastic attainments at 8 years of age of children selected on the basis of poor phonological loop skills at 5 years. Methods: Children with low and average performance at 5 years were tested three years later on measures of working memory, phonological awareness, vocabulary, language, reading, and number skill. Results: Two subgroups of children with poor early performance on phonological memory tests were identified. In one subgroup, the poor phonological memory skills persisted at 8 years. These children performed at comparable levels to the control group on measures of vocabulary, language and mathematics. They scored more poorly on literacy assessments, but this deficit was associated with group differences in complex memory span and phonological awareness performance. The second subgroup of children performed more highly on phonological memory tests at 8 years, but had enduring deficits in language assessments from 4 to 8 years. Conclusions: Persistently poor phonological memory skills do not appear to significantly constrain the acquisition of language, mathematics or number skills over the early school years. More general working memory skills do, however, appear to be crucial.

Gathercole, S.E., Tiffany, C., Briscoe, J., & Thorn, A. (2005). Developmental consequences of poor phonological short-term memory function in childhood: a longitudinal study. *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 46*, 598-611.

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The findings of both the qualitative and quantitative analyses suggest that policy investments in the quality of teachers may be related to improvements in student performance. Quantitative analyses indicate that measures of teacher preparation and certification are by far the strongest correlates of student achievement in reading and mathematics, both before and after controlling for student poverty and language status.

Darling-Hammond, L. (2000) Teacher quality and student achievement: A review of state policy evidence. *Education Policy Analysis Archives, 8*(1). Retrieved 20/6/2005 from http://epaa.asu.edu/epaa/v8n1/

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The authors also found that the duration and intensity of interventions was also related to positive effect sizes—the more intensive intervention had greater impact. Programs that were short, but intense, had greater effect than longer, less-intense interventions.

Elbaum, B., Vaughn, S., Hughes, M. T., Moody, S. W. (2000). How effective are one-to-one tutoring programs in reading for elementary students at risk for reading failure? A meta-analysis of the intervention research. *Journal of Educational Psychology*, 92, 605–619.

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Raskind and Wijsman said they used three different analytic approaches to search for genetic influences affecting how fast and accurately people could pronounce nonwords. For accuracy alone, they found five different potential contributing locations on four different chromosomes. When they examined influences on speed and accuracy, they found three other locations on different chromosomes. However, the signal from chromosome 2 was the most robust, particularly when the researchers only looked at speed and not accuracy in decoding. They said evidence points to a possible combination of genes on chromosomes 2, 10 and 11 affecting speed

Raskind, W.H., Igo, R., Jr., Chapman, N.H., Berninger, V.W., Matsushita, M., Brkanac, Z., Holzman, T., Brown, M., Thomson, J., & Wijsman, E.M. (in press). A genome scan in multigenerational families with dyslexia: Identification of a novel locus on chromosome 2q that contributes to phonological decoding efficiency. *Molecular Psychiatry.*

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"We function as advocates for the children, with the understanding that if we fail, the children will be seriously pre-empted from doing things with their lives, such as having important career options and achieving some potential values for society.

We should respond to inadequate teaching as we would to problems of physical abuse. Just as our sense of humanity would not permit us to allow child abuse in the physical sense, we should not tolerate it in the cognitive setting. We should be intolerant, because we KNOW what can be achieved if children are taught appropriately. We know that the intellectual crippling of children is caused overwhelmingly by faulty instruction -- not by faulty children.

**Because of these convictions, we have little tolerance for traditional educational establishments. We feel that they must be changed so they achieve the goals of actually HELPING ALL CHILDREN.**

**This call for humanity can be expressed on two levels. On that of society: Let's stop wasting incredible human potential through unenlightened practices and theories. On the level of children: Let's recognize the incredible potential for being intelligent and creative possessed by even the least impressive children, and with unyielding passion, let's pursue the goal of assuring that this potential becomes reality" (p.376).**
Engelmann, S., & Carnine, D. (1982). Theory of instruction.

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**Results from a recent Boston study of the effects teachers have on learning are fairly typical (Boston Public Schools, 1998). In just one academic year, the top third of teachers produced as much as six times the learning growth as the bottom third of teachers. In fact, 10th graders taught by the least effective teachers made nearly no gains in reading and even lost ground in math.**
Boston Public Schools. (1998, March 9). *High school restructuring*. Boston: Author.

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**Groundbreaking research in Tennessee and Texas shows that these effects are cumulative and hold up regardless of race, class, or prior achievement levels. Some of the classrooms showing the greatest gains are filled with low-income students, some with well-to-do students. And the same is true with the small-gain classrooms. It's not the kids after all: Something very different is going on with the teaching** (Sanders & Rivers, 1996).

**The data strongly indicate that if the interventions used in these studies were available to all children at risk for reading failure, less than six percent of the population would be in need of specialized interventions, such as those typically provided through special or compensatory education, for reading difficulties later in school.**
Lyon, G.R., & Fletcher, J.M. (2001, Oct). Early identification, prevention, and early intervention for children at-risk for reading failure. *Basic Education,* Center for Development and Learning Retrieved 12/2/2004 from http://www.cdl.org/resource-library/articles/early_id.php?type=subject&id=10

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**Because decoding works, children will rely on a decoding strategy. Decoding makes learning sight words roughly nine times easier than rote memorization; children can learn about nine sight words by decoding with the same effort it takes to learn a single word by rote (Gates, 1931; Reitsma, 1983).**
B. Murray http://www.auburn.edu/%7Emurraba/decodable.html

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**"Reading failure is a major problem for society. Leaders in this field emphasize the downstream consequences of poor reading are so much greater than the reading failure itself. The consequences include poor self-esteem, difficulty in social development, and interference with future employment."**
**Lyon, G.R. (2004). Address to the 55th International Dyslexia Association Conference in November 2004 in Philadelphia.**

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**" ...a successsful learning experience is itself a major contribution to mental health**" **(p.153)**
Steinberg, Z., & Knitzer, J. (1992). Classrooms for emotionally and behaviourally disordered students: Facing the challenge. *Behavioural Disorders, 17*, 145-15.

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**Time is running out to address the needs of struggling adolescent readers. "This is more than a crisis for high school kids," said Michael Kamil, a professor of psychological studies in education and learning at Stanford University and one of the panelists. "We almost need a trauma center to take care of this problem, it's that serious for kids that can't read. ... It's the number-one factor standing in the way of their graduating."**
Manzo, K.K. (2004, Oct.20). Reading researchers outline elements needed to achieve adolescent literacy. *Education Week, 24*(8), 10.

**The sheer volume of words that children are expected to read quickly and accurately is daunting. According to Carroll, Davies, and Richman (1971) and Adams (1990), if children successfully negotiate all the texts normally encountered by the end of third grade, they are expected to recognize and know well over 80,000 different words. A child is quickly faced with an orthographic avalanche of printed words. From the start, children will be expected to read words they have never before seen in print. Only a few thousand words usually receive direct instruction in the primary grades. It would be impossible to directly teach children all the words they will encounter in print. It is also impossible to directly teach children all the letter-sound correspondences which they will need to be able to "sound out" novel words. Even the most comprehensive phonics programs rarely provide direct instruction for more than about 90 phonics "rules." Yet, over 500 different spelling-sound "rules" are needed to read (Gough & Juel, 1990; Juel, 1994).**

Juel, C., & Minden-Cupp, C. (1999). *Learning to read words: Linguistic units and strategies*. CIERA Report #1-008. University of Michigan: Center for the Improvement of Early Reading Instruction Retrieved 12/2/03 from http://www.ciera.org/library/reports/inquiry-1/1-008/1-008.pdf

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**English consonants are highly regular (initial 96%, final 91%) and vowels are highly irregular (isolated 52%, vowels linked to consonants in rimes 77%) (Treiman, Mullenix, Bijejac-Babic, & Richmond-Welty, 1995). English has 200, 000 commonly used words (Bryson, 1990)**

Bryson, B. (1990). Mother tongue. London: Penguin Books.

Treiman, R., Mullenix, J., Bijejac-Babic, R., & Richmond-Welty, E.D. (1995). The special role of rimes in the description, use and acquisition of English orthography. *Journal of Experimental Child Psychology, 124*(2), 107-136.

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Wolf and Bowers (Bowers & Wolf, 1993; Wolf, 1999; Wolf & Bowers, 1999) **proposed that either phonological processing deficits or deficits in automatic naming speed or deficits in both can compromise the acquisition of fluent reading skills in children with dyslexia**. Wolf and Bowers have therefore advanced the hypothesis that these deficits identify two independent sources of reading dysfunction and that **phonological processing is associated primarily with decoding, whereas naming speed is associated primarily with fluency.**

Bowers, P. G., & Wolf, M. (1993). Theoretical links among naming speed, precise timing mechanisms and orthographic skill in dyslexia. Reading and Writing, 5, 69-85.

Wolf, M. (1999). What time may tell: Towards a new conceptualization of developmental dyslexia. Annals of Dyslexia, 49, 3-28.

Wolf, M., & Bowers, P. G. (1999). The double-deficit hypothesis for the developmental dyslexias. Journal of Educational Psychology, 91, 415-438.

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**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).**

Barger, J. (2003). *Comparing the DIBELS Oral Reading Fluency indicator and the North Carolina end-of-grade reading assessment.* Asheville, N.C.: North Carolina Teacher Academy.

Buck, J. and Torgesen, J. (2003). *The relationship between performance on a measure of oral reading fluency and performance on the Florida Comprehensive Assessment Test.* Tallahassee, Fla.: Florida Center for Reading Research.

Fuchs, L.S., Fuchs, D., Hosp, M.K., and Jenkins, J.R. (2001). Oral reading fluency as an indicator of reading competence: A theoretical, empirical, and historical analysis. *Scientific Studies of Reading, 5,* 239-256.

**2004**
**Oral reading fluency rates correlate better with other reading comprehension tests than those same tests correlate with each other (Fuchs & Fuchs, 1992; Fuchs, Fuchs, & Deno, 1982; Fuchs, Fuchs & Maxwell, 1988; Kranzler, Brownell, & Miller, 1998) (p.20).**
Crawford, D. (2004). Automaticity in decoding. *Direct Instruction News, 4*(2), 20-22.

**The authors examined the views of parents and teachers regarding beginning reading instruction using the questionnaire Approaches to Beginning Reading and Reading Instruction (ABRRI). Parents also rated the importance of 9 developmental areas, including literacy, and the extent to which home and school were responsible for each. Two components emerged on the ABRRI reflecting decoding or graphophonemic aspects and broader knowledge or constructivist aspects. Parents more frequently endorsed a bottom-up description of reading than teachers and gave higher ratings to the graphophonemic component than the constructivist component, whereas the reverse was true for teachers. Parents rated literacy development second only to character-moral development but were divided as to the responsibility of the school versus the home in literacy development.**
Evans, M.A., Fox, M., Cremaso, L., & McKinnon, L. (2004). Beginning reading: The views of parents and teachers of young children. *Journal of Educational Psychology, 96*, 130-141.

**"Hospitals are complaining that their clinics are being filled with kids who are being referred for things like Attention Deficit/Hyperactivity Disorder (ADHD)," said Dr Rowe, who was last week appointed by the federal Education Minister to run the inquiry. "But once the pediatricians sort out the children's literacy problems, the behaviour problems disappear. What is essentially an education issue has become a health p issue."**
Milburn, C. (2004, Dec 6). *Children in crisis: The real diagnosis*. The Age, P.1

**The intensive small group work must be frequent; in the studies my colleagues and I have reviewed, success has been produced when groups met 20 to 45 minutes per day, 4 to 5 days per week.**
Torgesen, J. (2004, Fall). Preventing early reading failure. *American Educator*. Retrieved 25/11/2004 from http://www.aft.org/pubs-reports/american_educator/issues/fall04/reading.htm

**It is my belief that individual case studies of teaching, provided they include data about student experience and learning that can be directly connected to observations of specific classroom activities, can provide invaluable insights into the processes that lie behind the teaching-learning relationship. I would argue that they are more likely to lead to a valid, evidential base for discovering teaching-learning processes than large-scale studies. But in themselves, case studies, like teacher-action studies, are not complete. They need to be replicated in a variety of different contexts, with different curriculum content, different kinds of students, and so on, for them to lead to the kind of generalizable explanatory theory that teachers need to guide their own practice in their own specific contexts (p.294-5).**
Nuthall, G. (2004). Relating classroom teaching to student learning: A critical analysis of why research has failed to bridge the theory-practice gap. *Harvard Educational Review, 74*, 273-306.

**When does program adaptation become a lethal mutation?**
Design-based Research Collective. (2003). Design-based research: An emerging paradigm for educational inquiry. *Educational Researcher, 32*, 5-8.

**Teachers themselves are not always good at rating student achievement, as their ratings tend to be strongly affected by student behavior 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.

**Within the professional culture of teaching, it is commonly believed that if something is taught (which usually means explained or demonstrated), it is automatically learned (Gess-Newsome & Lederman, 1999; Nuthall, 2001a; Oser & Baeriswyl, 2001). If it is not learned, then the problem lies in the inadequacy of the student's ability, motivation, or persistence, not in the ineffectiveness of the instruction (Fischler, 1994; Floden, 1996).**

Nuthall, G. (2004). Relating classroom teaching to student learning: A critical analysis of why research has failed to bridge the theory-practice gap. *Harvard Educational Review, 74*, 273-306.

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**Teachers commonly believe that "student interest and involvement constitutes both a necessary and sufficient condition for worthwhile learning" (p. 389).**

Prawat, R. S. (1992). Teachers' beliefs about teaching and learning: A constructivist perspective. *American Journal of Education, 100*, 354-395.

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**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

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**Approximately 10-15% of 7 to 9 year olds in the UK have been found to have reading comprehension deficits with normal word recognition skill.** These children have normal phonological abilities but significant problems with vocabulary, listening and reading comprehension (Nation & Snowling, 1998). When assessed N & S found that poor comprehenders were also less effective at using context to facilitate word recognition in comparison with controls. These deficits are similar to hyperlexics, although there is no evidence of a preoccupation with reading at a young age.

Nation, K., & Snowling, M. J. (1998). Semantic processing and the development of word recognition skills: Evidence from children with reading comprehension difficulties. Journal of Memory and Language, 39, 85-101

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**Literacy Standards in Australia noted that 27 per cent of Year 3 and 29 per cent 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.

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**Gains in the ability to perceive auditory durations did not generalize to changes in skills related to reading.**

Agnew, J., Dorn, D., Eden, G.F. (2004). Effect of intensive training on rapid temporal processing. *Brain and Language, 88*(1), 21-25.

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**Together, these findings provide evidence that dyslexic adults are not, as may have been assumed, unable to profit from remedial practice," wrote the researchers. "In fact, the same strategies that are effective in teaching children phonological awareness skills are helpful in adults. Further, they are accompanied by neural changes known to underlie reading remediation of developmental dyslexia in childhood combined with those previously observed during the rehabilitation of adults with acquired dyslexia [due to brain damage].**

Eden, G. F., Jones, K.M., Cappell, K., Gareau, L., Wood, F.B., Zeffiro, T.A., Dietz, N.A.E., Agnew, J.A. and Flowers, D.L. (2004). Neurophysiological recovery and compensation after remediation in adult developmental dyslexia, *Neuron, 44*, 411–422.

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**In this group of high school students who have been continuously and prospectively monitored since kindergarten, our findings indicate that difficulty with phonologic awareness represents the most robust characteristic of reading disability.**

Shaywitz, S. E., Fletcher, J. M., Holahan, J. M., Shneider, A.E., Marchione, K., Stuebing, K. K., Francis, D. J., Pugh K.R., Shaywitz, B. (1999). Persistence of dyslexia: The Connecticut longitudinal study at adolescence. *Pediatrics, 104,* 1351-1359.

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**In a study of students from the Connecticut Longitudinal Study, 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.

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**In seven experiments, we investigated whether compensated and uncompensated adults with dyslexia show different patterns of deficits in magnocellular visual processing and in language processing tasks. In four visual tasks, we failed to find evidence of magnocellular deficits in either group. However, both groups of adults with dyslexia showed deficits in component language skills, and the degree of reading impairment predicted the nature and extent of these deficits. Uncompensated readers showed deficits in orthographic and especially phonological coding and awareness and were slower on rapid naming. Compensated readers showed word and nonword performance below controls but better than the uncompensated readers. The compensated group was not significantly less accurate than controls on phonological awareness, nor significantly worse overall on rapid naming.**
Birch, S & Chase, C.H. (2004). Visual and language processing deficits in compensated and impaired dyslexic college students. *Journal of Learning Disabilities*, 37, 389 412.

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**But it was not until October 1996, with the release of the ACER (Australian Council for Educational Research) Report from the National Literacy Survey that the issues really became the subject of widespread discussion and scrutiny. The scandal documented by the 1996 report - that around third of all high school students were leaving school in a condition described as functionally illiterate.**
http://www.users.on.net/~glynnesutcliffe/debate.html

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**During the 1980s, the Ministry of Education in Victoria instituted professional development programmes in literacy and numeracy (BLIPS Basic Learning in Primary Schools), along with an Australian federal government-funded programme (ELIC Early Literacy In-service Course). These programmes were given high priority and primary school practice was informed by these initiatives.**
Rowe, K.J. (1987). *An evaluation of the Early Literacy Inservice Course (ELIC) in Victorian schools.* Summary report on behalf of the Victorian ELIC Steering Committee. Melbourne, Vic: Research and Curriculum Development Branch, Ministry of Education.
Rowe, K.J. & Sykes, J. (1989). The impact of professional development on teachers' self-perceptions. *Teaching and Teacher Education*, 5, 129-141.

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**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.

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**The gap between achievement levels of different groups of students increases during the subsequent years of schooling.**
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.

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**A wealth of research conducted over the years has consistently shown that perceptual and motor processing skills are poor predictors of reading and that training in these skills is not useful for remediating reading problems (e.g., Kavale, 1982; Larsen & Hammill, 1975; Mann, 1979). Therefore, one is not surprised to learn that such abilities proved to be poor predictors of reading in the meta-analyses reviewed.**

Hammill, D.D. (2004). What we know about correlates of reading. *Exceptional Children, 70*, 453-469.

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**This study provides a meta-analysis of the correlational literature on measures of phonological awareness, rapid naming, reading, and related abilities. Correlations (N = 2,257) were corrected for sample size, restriction in range, and attenuation from 49 independent samples. Correlations between phonological awareness (PA) and rapid naming (RAN) were low (.38) and loaded on different factors. PA and RAN were moderately correlated with real-word reading (.48 and .46, respectively). Other findings were that (a) real-word reading was correlated best (r values were. 60 to. 80) with spelling and pseudoword reading, but correlations. with RAN, PA, vocabulary, orthography, IQ, and memory measures were in the low-to-moderate range (.37 to.43); and (b) correlations between reading and RAN/PA varied minimally across age groups but were weaker in poor readers than in skilled readers. The results suggested that the importance of RAN and PA measures in accounting for reading performance has been overstated.**

Swanson, H. L., Trainin, G., Necoechea, D. M., & Hammill, D. D. (2003). Rapid naming, phonological awareness, and reading. A meta-analysis of the correlational evidence. *Review of Educational Research, 73,* 407-444.

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**In their 5-factor Maximum Likelihood with Varimax and Promax Rotations, Swanson et al.'s (2003) spoken language cluster (vocabulary) failed to load to any degree of usefulness on the three reading factors (i.e., Pseudoword Reading, .11; Real Word Reading, .16; Comprehension, .16).**

Swanson, H. L., Trainin, G., Necoechea, D. M., & Hammill, D. D. (2003). Rapid naming, phonological awareness, and reading. A meta-analysis of the correlational evidence. *Review of Educational Research, 73,* 407-444.

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**The two best known examples of sound research-based practices coming to scale are Direct Instruction (Carnine, Silbert, & Kameenui, 1997) and Success for All (Slavin, Madden, Dolan, & Wasik, 1996).**

Foorman, B.R., & Moats, L.C. (2004). Conditions for sustaining research-based practices in early reading instruction. *Remedial and Special Education, 25,* 51-60.

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**This study showed that phonics instruction was equally effective for all children regardless of their initial ability, as opposed to the conclusion of the NRP report that such instruction is more effective for at-risk children (Ehri et al., 2001). … When family SES, other child characteristics, and phonics instruction were held constant, children with lower entering literacy skills and knowledge did not benefit greatly from integrated language arts instruction.**

Xue, Y., & Meisels, S.J. (2004). Early literacy instruction and learning in kindergarten: Evidence from the early Childhood Longitudinal Study-Kindergarten Class of 1998-1999. *American Educational Research Journal, 41*, 191-229.

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**Socioeconomic background is often considered the most important influence on educational outcomes and an important element in the funding of schools. However, its influence on early school leaving, Year 12 completion and University entrance performance is considerably smaller than that of achievement in literacy … (Marks & Fleming, 1998a; Marks et al., 2000; Marks et al., 2001).**

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

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**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

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**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.

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**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

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**Within the professional culture of teaching, it is commonly believed that if something is taught (which usually means explained or demonstrated), it is automatically learned (Gess-Newsome & Lederman, 1999; Nuthall, 2001a; Oser & Baeriswyl, 2001). If it is not learned, then the problem lies in the inadequacy of the student's ability, motivation, or persistence, not in the ineffectiveness of the instruction (Fischler, 1994; Floden, 1996).**

Nuthall, G. (2004). Relating classroom teaching to student learning: A critical analysis of why research has failed to bridge the theory-practice gap. *Harvard Educational Review, 74*, 273-306.

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**Teachers commonly believe that "student interest and involvement constitutes both a necessary and sufficient condition for worthwhile learning" (Prawat, 1992, p. 389).**

Prawat, R. S. (1992). Teachers' beliefs about teaching and learning: A constructivist perspective. American Journal of Education, 100, 354-395.

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**The spelling measure proved to be more sensitive than other measures for documenting generalization, because spelling reflects "linguistic understanding of speech sounds" (Edwards, 2003, p. 137).**

Edwards, L. (2003). Writing instruction in kindergarten: Examining an emerging area of research for children with writing and reading difficulties. *Journal of Learning Disabilities, 36,* 136-148.

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**Typically, instruction for children who are at risk of reading failure must be more explicit, more comprehensive, more supportive, and more intensive than reading instruction required by average readers (Foorman & Torgesen, 2001; Snow, Burns, & Griffin, 1998).**

Foorman, B. R., & Torgesen, J. (2001). Critical elements of classroom and small-group instruction promote reading success in all children. *Learning Disabilities Research & Practice, 16*(4), 203-212.

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**"If you were an aggressive, disruptive 1st. grader and you were in a poorly managed classroom, the risk of being aggressive later on was 59 times that of average kids. In well managed classrooms, the same child's risk was only three times that of the average children. "**

Kellam, S.G. (1999). *The influence of the first-grade classroom on the development of aggressive behavior*. Research Bulletin No. 25: Phi Delta Kappa Center for Evaluation, Development, and Research December. [On-Line]. Available: http://www.pdkintl.org/edres/resbul25.htm

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**Taken together, these results provide evidence for the role of mastery of reading achievement in aggressive behavior, particularly in boys, and in depression, particularly in girls. The preventive trials provide evidence of the direction of effects, and the reversibility of the aggressive behavior and depressive symptoms in some children by raising the level of reading achievement.**

**Kellam, S.G. (1999***). Developmental epidemiologically-based prevention research: From efficacy to effectiveness***. National Institute of Mental Health Fifth Annual National Conference on Prevention Research. [On-Line]. Available: http://www.oslc.org/spr/ecpn/nckellam.html**

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**Pupils need to meet a concept or idea on four separate occasions if they are to learn and remember it and that these occasions should not be separated by more than two days.**
Nuthall, G., & Alton-Lee, A. (1994). How pupils learn. *Item 3, SET No 2*. Wellington, New Zealand: New Zealand Council for Educational Research.

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**A proper theory of speech is essential to an understanding of how people read—the most relevant consideration arises out of the deep biological gulf that separates the two processes. Speech, on the one side, is a product of biological evolution, standing as the most obvious, and arguably the most important, of our species-typical behaviors. Reading/writing, on the other, did not evolve biologically, but rather developed (in some cultures) as a secondary response to that which evolution had already produced. A consequence is that we are biologically destined to speak, not to read or write. Accordingly, we are all good at speech, but disabled as readers and writers; the difference among us in reading/writing is simply that some are fairly easy to cure and some are not.**
Liberman, A.M. (1997). How theories of speech affect research in reading and writing. In B. Blachman, (Ed.), Foundations of reading acquisition and dyslexia: Implications for early intervention (pp.4-5). Mahwah, N.J.: Lawrence Erlbaum.

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**Regard no practice as immutable. Change and be ready to change again. Accept no eternal verity. Experiment (p. 346).**
Skinner, B. F. (1984). *A matter of consequences: Part three of an autobiography*. Washington Square, New York: New York University Press. (Original work published 1983)

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**It is recommended that educators use a variety of learning methods and encourage students to be receptive to different learning methods rather than try to link specific learning methods to specific learning styles.**
Loo, R. (2004). Kolb's learning styles and learning preferences: is there a linkage? *Educational Psychology, 24*(1), 99-108.

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**Research reviews facilitate the process of evaluating the evidence behind a broad range of programs … we should look at multiple reviews because researchers differ in their review criteria, conclusions, and recommendations.**
Slavin, R. (2003). A reader's guide to scientifically based research. *Educational Leadership, 60*(5), 12-16. Retrieved May 13, 2004, from http://www.ascd.org/publications/ed_lead/200302/toc.html

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**The National Reading Panel (1999) identified these (5) elements as having been established in rigorous research, especially in randomized experiments. Yet there is a big difference between a program *based* on such elements and a program that has itself been compared with matched or randomly assigned control groups.**
Slavin, R. (2003). A reader's guide to scientifically based research. *Educational Leadership, 60*(5), 12-16. Retrieved May 13, 2004, from http://www.ascd.org/publications/ed_lead/200302/toc.html

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**A single study involving a small number of schools or classes may not be conclusive in itself, but many such studies, preferably done by many researchers in a variety of locations, can add confidence that a program's effects are valid. In fact, experimental research in education usually develops in this way. Rather than evaluate one large, definitive study, researchers must usually look at many small studies that may be flawed in various (unbiased) ways. But if these studies tend to find consistent effects, the entire set of studies may produce a meaningful conclusion.**
Slavin, R. (2003). A reader's guide to scientifically based research. *Educational Leadership, 60*(5), 12-16. Retrieved May 13, 2004, from http://www.ascd.org/publications/ed_lead/200302/toc.html

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**In education experiments, an effect size of +0.20 (20 percent of a standard deviation) is often considered a minimum for significance; effect sizes above +0.50 would be considered very strong.**
Slavin, R. (2003). A reader's guide to scientifically based research. *Educational Leadership, 60*(5), 12-16. Retrieved May 13, 2004, from http://www.ascd.org/publications/ed_lead/200302/toc.html

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**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.

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**By grade 6, students know the meanings of more than 7,500 root words. By grade 8, that number has grown to at least 11,000, and by grade 12, it has been estimated to be around 15,000 or more.**

Curtis, M.E. (2002, May). *Adolescent reading: A synthesis of research.* Paper presented at the U.S. Department of Education and the National Institute of Child Health and Human Development conference on adolescent literacy, Baltimore, MD. Retrieved May 3, 2004, from http://216.26.160.105/conf/nichd/synthesis.asp

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**"The speed of naming pronounceable nonwords is one of the tasks that most clearly differentiates good from poor readers."**

Stanovich, K.E. (2000). *Progress in understanding reading: Scientific foundations and new frontiers*. New York: Guilford Press**.**

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**One accidental finding cropped up when people coding the videos had a "What the hell was that?" reaction to noises on the tapes. Those noises were mostly interruptions by the intercom, visitors, etc. More than 30% of American classes suffered interruptions. Zero percent of Japanese classes suffered an intrusion.**

Bracey, G.W. (2003). Research: Teachers around the world. *Phi Delta Kappan, 85*, 253-254. Retrieved 2/5/2004 from http://www.educationnews.org/research1.htm

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**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., and Purdie, N. (2005). Teacher's attitude to and knowledge of metalinguistics in the process of learning to read. *Asia-Pacific Journal of Teacher Education, 33*(1), 65-76.

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**A survey by Rohl and Greaves (2005) reported that 36% of beginning primary teachers felt unprepared to teach reading and 57% unprepared to teach phonics. Senior staff at their schools were more pessimistic, considering that 49% of these beginning teachers were unprepared to teach reading, and 65% unprepared to teach phonics. These figures on unpreparedness rose dramatically (77% - 89%) when the beginning teachers were confronted with diverse learners (those with disabilities or learning difficulties, indigenous and low SES students, and students whose initial language was not English).**

Rohl, M., & Greaves, D. (2005). How are pre-service teachers in Australia being prepared for teaching literacy and numeracy to a diverse range of students? *Australian Journal of Learning Disabilities, 10*(1), 3-8.

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**"Taken together, these results indicate that for this cohort of pre-service teachers, entry knowledge of graphological/phonological rules and terminology tends to be fragmentary, suggesting that without further instruction in domain-specific knowledge in the area of phonological awareness and phonics, they may have difficulty providing systematic and explicit beginning reading instruction. This supports findings from previous studies which found that many pre-service and in-service teachers have limited knowledge of phonological awareness and phonics (e.g. Fielding-Barnsley & Purdue, 2005; Moats & Foorman, 2003; Rennie & Harper, 2006; Rohl & Greaves, 2005)" (P. 82-3)**

**"The written comments have also highlighted, unintentionally, the fact that a number of the pre-service teachers in the present study, like those in reported by Zipin and Brennan (2006), showed deficiencies in personal literacy skills with regard to grammar, punctuation, and sentence structure" (p.85).**

Fisher, B.J., Bruce, M.E., & Greive, C. (2007). The entry knowledge of Australian pre-service teachers in the area of phonological awareness and phonics. In A Simpson (Ed.). *Future directions in literacy: International conversations 2007*. University of Sydney.
http://ses.library.usyd.edu.au/bitstream/2123/2330/1/FutureDirections_Ch5.pdf

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In the recent 2000 PISA study of 15 year olds in over 30 industrialised countries, **Australian students performed well above the OECD average in the domain of reading.**
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.

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**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.

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A more recent review of the literature concluded that research on effective schools identifies **five factors: strong educational leadership; emphasis on acquiring basic skills; an orderly and secure environment; high expectations of student achievement; and frequent assessment of student progress.**
Scheerens, J., & Bosker, R. (1997). *The foundations of educational effectiveness*. Oxford: Pergamon.

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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.

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For a given investment, alternative to smaller classes, such as **time for teacher professional development, devoting resources to students with learning difficulties, developing better curriculum resources, and varying the time students spend in groups of different size should be seen as better use of resources**.
Prais, S. (1996). Class size and learning: The Tennessee experiment - What follows? *Oxford Review of Education*, *22*(4), 399-415.

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**Education productivity studies typically measure the size of the relationship between various quantifiable education factors and student achievement. Goldhaber, Brewer, and Anderson (1999), for example, investigate the contributions of school, teacher, and class characteristics on student achievement. They find only about 3 percent of the contribution teachers make toward explaining student achievement is associated with teacher experience, degree level, and other readily observable characteristics. The remaining 97 percent is made up of teacher qualities or behaviors that could not be separately isolated and identified.**
Goldhaber, D., Brewer, D.J., & Anderson, D. (1999). A three-way error components analysis of educational productivity. *Education Economics 7*(3), 199–208.

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**A growing body of research shows that the quality of the teacher in the classroom is the most important schooling factor predicting student outcomes (see, for instance, Ferguson 1998; Goldhaber 2002; Goldhaber et al. 1999; Hanushek et al. 1999; Wright et al. 1997). The impact of having a high-quality teacher can be profound. Hanushek (1992), for instance, 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.*

Ferguson, R. (1998). Teachers' perceptions and expectations and the Black-White test Score gap. In C. Jencks and M. Phillips (Eds.). *The black-white test score gap,* pp.273–317. Washington, DC: Brookings Institution Press.

Goldhaber, D. (2002). The mystery of good teaching: Surveying the evidence on student achievement and teachers' characteristics. *Education Next, 2*(1), 50–55.

Goldhaber, D., Brewer, D.J., & Anderson, D. (1999). A three-way error components analysis of educational productivity. *Education Economics 7*(3), 199–208.

Hanushek, E. A. (1992). The trade-off between child quantity and quality. *Journal of Political Economy 100*(1), 84–117.

Hanushek, E. A., Kain, J. F., & Rivkin, S. G. (1999). *Do higher salaries buy better teachers?* Working Paper No. 7082. Cambridge: National Bureau of Economic Research.

Wright, P., Horn, S., & Sanders, W. (1997). Teachers and classroom heterogeneity: Their effects on educational outcomes. *Journal of Personnel Evaluation in Education, 11*(1), 57–67.

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**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).**

Coleman, J. S. (1990). *Equality and achievement in education.* Boulder, Co: Westview Press.

Goldhaber, D. D., & Anthony, E. (2004). *Can teacher quality be effectively assessed?* Washington, DC: Urban Institute Press. Retrieved 21/3/2004 from
http://www.urban.org/UploadedPDF/410958_NBPTSOutcomes.pdf

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**Receiving small rewards for doing something well involves activation of the orbitofrontal cortex**, which elevates mood and leads to brain changes that correspond to feeling happier.

Jack Nitschke, UW-Madison current issue of NeuroImage, 2004-03-01,
http://www.sciencedaily.com/releases/2004/02/040229231659.htm

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**Wealth and power are much more likely to be the result of breeding than they are of reading**

Fran Lebowitz (1946-)

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**The results showed some slight positive relationship between small class size and achievement gain, and a positive relationship between full-day program and the gain scores. It is also found that these effects are more pronounced for children from minority, low-income backgrounds.**

Yan, W. & Lin, Q. (2004, February 24). The effect of kindergarten program types and class size on early academic performance. *Education Policy Analysis Archives, 12*(7). Retrieved [Date] from
http://epaa.asu.edu/epaa/v12n7/

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**"Teachers have been content to follow the methods in which they themselves were taught ...."**

James Johonnot, Principles and Practice of Teaching. 1881, p. 51.

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Although letter-name knowledge is the strongest predictor of future reading ability, past research has suggested that letter-name accuracy may not be enough to facilitate reading. For example, **previous experiments on letter-name training did not produce increased reading achievement (Jenkins, Bausell, & Jenkins, 1972; Samuels, 1971).**

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**Language of instruction must be seen as only one aspect, however, of instructional programming for English language learners. As many previous reviewers have concluded, quality of instruction is at least as important as language of instruction. This synthesis identified a number of specific, replicable programs that have strong evidence of effectiveness. Particularly well supported are Success for All and Direct Instruction, two well-structured, phonetic reading approaches that provide appropriate English language development adaptations for ELLs.**

**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). It may be that programs that are quite**

**different from these exist but have not been adequately evaluated, or could be developed. The observation, however, that currently available reading methods known to be effective for English proficient students also accelerate the achievement of English language learners implies that a broader range of interventions also known to be effective with children in general may likewise be effective with English language learners, with appropriate adaptations (see Slavin & Calderón, 2001).**

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](www.csos.jhu.edu/crespar/techReports/Report66.pdf)

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**Statistically, more American children suffer long-term life-harm from the process of learning to read than from parental abuse, accidents, and all other childhood diseases and disorders *combined*. In purely economic terms, reading-related difficulties cost our nation more than the war on terrorism, crime, and drugs *combined*.**
**"We need to reconceptualize what it means to learn to read and who's responsible for its success if we're going to deal with the problem."** - 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*

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**"Reading is absolutely fundamental. It's almost trite to say that. But in our society, the inability to be fluent consigns children to failure in school and consigns adults to the lowest strata of job and life opportunities". - Dr. Grover Whitehurst, Assistant Secretary, U.S. Department of Education - Director, Institute of Education Sciences (9-10-03 Children of the Code interview).**
http://www.childrenofthecode.org/cotcintro.htm

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**Cohen (1988) pointed out that the relatively small effects of around d = .20 were most representative of fields closely aligned with education, such as personality, social, and clinical psychology. Similarly, Lipsey and Wilson's (1993) more recent compendium of meta-analyses concluded that psychological, educational, and behavioral treatment effects of modest values of even d = .10 to d = .20 should not be interpreted as trivial.**
Lipsey, M. W, & Wilson, D. B. (2001). *Practical meta-analysis.* Thousand Oaks, CA: Sage.

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**Before the switch was flipped, the marks on the page had been opaque. Now they were affecting my heart rate. It is fun to have fun, but you have to know how.**
Menand, L. (2002). Cat people: What Dr. Seuss really taught us. *The New Yorker*, 23/12/2002.

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**Approximately 20 per cent of Australians aged 15-74 years have been identified as having 'very poor' literacy skills, with an additional 28 per cent who '… could be expected to experience some difficulties in using many of the printed materials that may be encountered in daily life' (ABS 1997, p. 7). Evidence from the 1996 *National School English Literacy Survey* (Masters & Forster, 1997) indicated that the proportion of Year 3 and Year 5 students in Australian schools who did not meet minimum performance standards of literacy required for effective participation in further schooling was found to be as high as 27 per cent for Year 3 students and 29 per cent for Year 5 students**
Masters, G.N., & Forster, M. (1997a). *Mapping literacy achievement: Results of the 1996 National School English Literacy Survey*. A report on behalf of the Management Committee for the National School English Literacy Survey. Canberra, ACT: Commonwealth Department of Employment, Education, Training and Youth Affairs.
Masters, G.N., & Forster, M. (1997b). *Literacy standards in Australia*. Canberra, ACT: Commonwealth of Australia.

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**Independent research estimates that more than 700,000 (or 22%) of Australia's young people aged between 5 & 18 are from families living below the poverty line. In Year 3, 88% of Australian children reach a satisfactory standard in literacy tests. Of children from disadvantaged families, only 61% reach this standard and by Year 5 the gap is even wider – 48% for disadvantaged children versus 87% for children of higher socio-economic status. *(The Smith Family)***

**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.

**At pre-school age, no clear differences emerged in motivational orientations. … all analyses revealed distinctly different developmental patterns of motivation as a function of reading career … the regressive reading groups displayed lower task orientation, and higher ego-defensiveness and social dependency over age than progressive reading career groups. P.171**
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.

**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

The relevant references were:
Collins, N. D. (1996). Motivating low performing adolescent readers. *ERIC Digest*. (ERIC Document Reproduction Service No. ED 396 265).
Guthrie, J. T., Alao, S., & Rinehart, J. M. (1997). Engagement in reading for young adolescents. *Journal of Adolescent & Adult Literacy, 40*(6), 438–446.
Wigfield, A., & Eccles, J. S. (1994). Children's competence beliefs, achievement values, and general self-esteem: Change across elementary and middle school. *Journal of Early Adolescence, 14*(2), 107–138.

**National longitudinal studies show that approximately 75% of those with reading problems in third grade still experience reading difficulties in the ninth grade** (Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher 1996; Shaywitz, Fletcher, Holahan, & Shaywitz, 1992).

**Behaviour problems among children with learning disorders are about 3 times than the norm by 8 years of age** (Mash & Wolfe, 2002, p.295).
Mash, E.J., & Wolfe, D.A. (2002). *Abnormal child psychology.* Belmont, CA: Wadsworth Thomson Learning.

**First graders know an average of 24,000 words.**
Seashore, R.H. (1947). How many words do children know? *The Packet, II,* 3-17.

**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).**

**"Children learn spelling without direct instruction if they read and write." (p. 212).**
Goodman, K. S. (1989). Whole-language research: Foundations and development. *The Elementary School Journal, 90*, 207-221.

**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.

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**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.

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**Seven percent of students are "Borderline Deficient" (IQs 70-79), two percent of students are classified as mentally deficient (IQs below 70).**

Clark, F.J. (2003). A response to the proposed elimination of discrepancy criteria. *Communiqué, 31*(5), 44. Retrieved 11/8/2003 from http://www.ldonline.org/news/discrepancy_criteria.html

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**Between the ages of four and nine, your child will have to master some 100 phonics rules, learn to recognize 3,000 words with just a glance, and develop a comfortable reading speed approaching 100 words a minute. He must learn to combine words on the page with a half-dozen squiggles called punctuation into something – a voice or image in his mind that gives back meaning. (Paul Kropp, 1996)**

**Research and theory (e.g., Ehri, 1992) suggested that the most effective way to remember how to read sight words is not the way suggested by conventional wisdom, which is to memorise shapes or other strictly visual features of words. Rather the most effective way involves bonding the letters to the word's pronunciation held in memory so that sight of the word immediately activates its spoken form and meaning. Letter-sound correspondences are the tools that the mind uses to form the bond. However, the process of sight word reading is different from that of using letters and sounds to decode unknown words. In sight word reading, the words are read from memory, not from decoding and blending operations, because the words are familiar. As a result, the act of reading them is carried on by memory processes, not by decoding processes.**

Gaskins, I. W., Ehri, L. C., Cress, C., O'Hara, C., Donnelly, K. (1996). Procedures for word learning: Making discoveries about words. *The Reading Teacher, 50,* 312-327.

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The large-scale data do seem to confirm some of the findings from small-scale research but not others. **Some practices, namely metacognition, using trade books and a measure of integrating reading and writing, did prove positively related to reading comprehension.** Other practices, however, such as **having students work in groups, increasing parental involvement, and the use of authentic assessment, did not.** And **time spent reading in class actually had a negative relationship to student performance.** The addition of classroom practices to large-scale models seems to make the overall impact of teachers comparable to that of student background. As with typical production functions, the teacher background model revealed only a single modest teacher effect. The classroom practice model, however, revealed multiple teacher effects, some of them quite strong. The total standardized effect for the four

teacher variables (.70) is actually somewhat larger than the total standard effect of the two student background measures (.56).

Wenglinsky, H. (June 30, 2003). Using large-scale research to gauge the impact of instructional practices on student reading comprehension: An exploratory study. *Education Policy Analysis Archives, 11*(19). Retrieved 4/7/2003 from http://epaa.asu.edu/epaa/v11n19/

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**The seven "hottest" topics for 2003 are as follows: direct instruction, early intervention, fluency, high-stakes assessment, phonemic awareness, phonics, and scientific reading research and practice.**
Cassidy, J & Cassidy, D. (2002, Dec). What's hot, what's not for 2003; seventh annual survey examines key topics in reading research and practice. *Reading Today.*

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**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.

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**On phoneme counting tasks, participants evidenced the most confusion about words where the number of letters did not correspond directly to the number of speech sounds. Only 2% of the preservice and 19% of the inservice teachers knew that the word box is composed of four speech sounds, although it contains only three letters (x corresponds to /k/ + /s/). On a similar item, Moats (1994) found that 25% of experienced teachers knew that the word ox was composed of three speech sounds. About half of the preservice teachers had difficulty reversing the phonemes in a given word to produce a new word (Item 21, 48% correct; Item 22, 59%; see Table 5). As noted by McCutchen et al. (in press), this conscious dissociation of sounds from knowledge of word spellings is critical if teachers are to understand how children think about words and sounds before they learn to read and spell.**

**80% of the preservice teachers and 74% of the inservice teachers agreed that the most beneficial strategy for identifying an unknown word was to use the context to figure it out. Both groups agreed that a teacher should not be concerned when early readers' miscues do not alter meaning (76% preservice; 79% inservice). Only 22% of the preservice and 36% of the inservice teachers recognized that phonological awareness involves oral language and is not a method of reading instruction.**
Mather, N., Bos, C., & Babur, N. (2001). Perceptions and knowledge of preservice and inservice teachers about early literacy instruction. *Journal of Learning Disabilities*, 34, 472-482.

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**The following tasks are ordered from easy (1) to difficult (6) based on findings of Schatschneider, Francis, Foorman, Fletcher, & Mehta (1999):**
**1. First sound comparison: identifying the names of pictures beginning with the same sound**
**2. Blending onset-rime units into real words**
**3. Blending phonemes into real words**
**4. Deleting a phoneme and saying the word that remains**
**5. Segmenting words into phonemes**
**6. Blending phonemes into nonwords.**
Ehri, L.C., Nunes, S.R., Willows, D.M., Schuster, B.V., Yaghoub-Zadeh, Z., Shanahan, T. (2001). Phonemic awareness instruction helps children learn to read: Evidence from the National Reading Panel's meta-analysis. *Reading Research Quarterly, 36*, 250- 287.

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**"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".**
*Meaningful Differences in the Everyday Experiences of Young American Children (1995)*

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**Not only is the left planum temporale atypical in developmental dyslexia but so is the right planum temporale; the greater symmetry of the two being the most typical finding in developmental dyslexia.**

Daigneault, S. (2002). Pure severe dyslexia after a perinatal focal lesion: Evidence of a specific module for acquisition of reading. *Journal of Developmental & Behavioral Pediatrics, 23*, 256-265.

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**The brain images reveal that children use a region in the back of the brain called the left extrastriate cortex, when processing language. The region is located in area where visual information is processed.** *Adults tended to have much less activity in the extrastriate cortex and more activity in the frontal cortex*. **This part of the brain seems to be involved in coordinating many different parts of the brain, Schlaggar said. (Washington University) The results could mean that children use a more visual approach to language than adults do, Schlaggar said. Another possibility is that other parts of the brain may take control in children's brains until the frontal cortex matures, he said.**
http://www.stltoday.com/stltoday/news/stories.nsf/News/B82EE5D7059435BF86256BC3000C16C3?OpenDocument&Headline=Children%20use%20brain%20differently%20for%20language%20tasks,%20study%20says

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**We would also wish to emphasise that there is perhaps unnecessary pessimism concerning the prognosis for older low-progress readers. We support the desirability of a preventative early intervention approach to reading difficulties but some low-progress readers will still slip through the net and early intervention is not always effective. Similarly, 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

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**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. Instead, we recommend using praise to boost self-esteem as a reward for socially desirable behavior and self-improvement.**
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

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**Speech, on the one side, is a product of biological evolution, standing as the most obvious, and arguably the most important, of our species-typical behaviors. Reading/writing, on the other, did not evolve biologically, but rather developed (in some cultures) as a secondary response to that which evolution had already produced. A consequence is that we are biologically destined to speak, not to read or write**.

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**Speech has been around for 200,000 years or more, although the idea that it could be rendered alphabetically was born no more than 4,000 years ago.**
Liberman, A. (1997). How theories of speech affect research in reading and writing. In B. Blachman (Ed.) *Foundations of reading acquisition and dyslexia.* pp.3-19. Mahwah, NJ: Lawrence Erlbaum Associates.

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**The early identification of children at-risk for reading failure coupled with the provision of comprehensive early reading interventions can reduce the percentage of children reading below the basic level in the fourth grade (i.e., 38%) to six percent or less.**
Lyon, G. R. (2003). Why do some children have difficulty learning to read? What can be done about it? *Perspectives, 29*(2). Retrieved 3/6/2003 from http://www.educationnews.org/Reading-Disabilities-Why-Do-Some-Children.htm.

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- The proportion of no-treatment students who did not respond to classroom instruction was 25-30%, the percentage of treatment students who were unresponsive was 7.0
- Markers associated with unresponsiveness to treatment included slow letter naming, poor verbal ability and phonological memory, and poor attention.
- most children (i.e., 92%) who were unresponsive in kindergarten remained unresponsive in first grade.
- students who do not respond to kindergarten treatment may require more intensive and individualized intervention than is offered by classwide peer-mediated approaches or by large-group phonological awareness training. Some students may also need treatment with additional treatment components (e.g., fluency training, behavioral training, or vocabulary instruction).
- The results also highlight the importance of conducting treatment with fidelity.

Al Otaiba, S. (2001). Children who do not respond to early literacy instruction: A longitudinal study across kindergarten and first grade *Reading Research Quarterly, 36*, 344-346.

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An adult reader knows that the initial sound of leap is the same as the final sound of took though the first is a clear, tongue-tip lateral consonant and the second may be a dark, vocalized glide without any tongue-tip contact. This is the result of a phonemic analysis of English that identifies the first as the allophone of the phoneme /l/ that occurs initially before a high front vowel and the second as the allophone that occurs finally after a high back vowel.

For every word a child learns, we estimate that there are an average of one to three additional related words that should also be understandable to the child, the exact number depending on how well the child is able to utilize context and morphology to induce meanings. (Nagy & Anderson, 1984, p. 304)

Some adult speakers believe that there is an /l/ in talk even though it has long since disappeared from the language, and many are quite uncertain as to whether there is an /l/ in palm and salmon.

Labov, L. (2003). When ordinary children fail to read. *Reading Research Quarterly, 38*, 128-131.

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1. The average child has little difficulty with the alphabetic principle. Success rates in decoding single, lone consonants are consistently above 95%, and success is relatively high for single-vowel nuclei and single-consonant codas.
2. It is the combinatory aspect of sound-to-letter correspondences that lies at the heart of the decoding problem. Relations that are one-to-many or many-to-one lead to dramatic declines in success rates, even when they are quite regular.
3. Rules of limited regularity can be absorbed and utilized if the exceptional cases are presented explicitly and in close proximity to the generalization.
4. 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.

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Most new readers have an active vocabulary of some 10,000 words.

Labov, L. (2003). When ordinary children fail to read. *Reading Research Quarterly, 38*, 128-131.

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The rate at which trained children achieved phonemic awareness in preschool is important in addition to the actual level of phonemic awareness achieved. Those who became poor readers in Year 5 had made slow progress in achieving phonemic awareness in preschool even though they were eventually successful.

Byrne, B., Fielding-Barnsley, R, & Ashley, L. (2000). Effects of preschool phoneme identity training after six years: Outcome level distinguished from rate of response. *Journal of Educational Psychology, 92*, 659-667.

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This article reviews the research literature that describes children who are unresponsive to generally effective early literacy interventions. A majority of unresponsive students had phonological

**awareness deficits. Additional characteristics included phonological retrieval or encoding deficits, low verbal ability, behavior problems, and developmental delays.**
Al Otaiba, S. & Fuchs, D. (2002). Characteristics of children who are unresponsive to early literacy intervention: A review of the literature. *Remedial and Special Education, 23,* 300-316.

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**Direct instruction in phonological awareness and the alphabetic principle improved the reading performance of children with reading difficulties over time. However, direct instruction in phonological awareness in conjunction with explicit training in specific metalinguistic concepts and metacognitive strategies was more advantageous overall**
Wright, J., & Jacobs, B. (2003). Teaching phonological awareness and metacognitive strategies to children with reading difficulties: A comparison of the two instructional methods. *Educational Psychology, 23*(1), 17-45.

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**Before intervention, all children with dyslexia showed distinctly aberrant spatiotemporal brain activation profiles featuring little or no activation of the posterior portion of the superior temporal gyrus (STGp), an area normally involved in phonologic processing, and increased activation of the corresponding right hemisphere area. After intervention that produced significant improvement in reading skills, activity in the left STGp increased by several orders of magnitude in every participant. No systematic changes were obtained in the activation profiles of the children without dyslexia as a function of time.**
Simos, P., Fletcher, J., Bergman, E., Breier, J., Foorman, B., Castillo, E., Davis, R., Fitzgerald, M., & Papanicolaou, A. (2002). Dyslexia-specific brain activation profile becomes normal following successful remedial training. *Neurology, 58*, 1203-1212.

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**Experiments on letter-name training did not produce increased reading achievement (Jenkins, Bausell, & Jenkins, 1972; Samuels, 1971).**
Jenkins, J. R., Bausell, R. B., & Jenkins, L. M. (1972). Comparisons of letter name and letter sound training as transfer variables. *American Educational Research Journal, 74*, 75-86.
Samuels, S. J. (1971). Letter name versus letter sound knowledge in learning to read. *Reading Teacher, 24*, 604-609, 662.

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**Letter-name knowledge and phonological awareness as the two best predictors of how well children will read in their first 2 years of schooling.**
Scarborough, H. S. (1998). Early identification of children at risk for reading disabilities: Phonological awareness and some other promising predictors. In B. K. Shaprio, P. J. Accardo, & A. J. Capute (Eds.), Specific reading disability: A view of the spectrum (pp. 75-119). Timonium, MD: York Press.

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**"...children will differ in their PA and some will need more instruction than others. In kindergarten, most children will be nonreaders and will have little PA, therefore PA instruction should benefit everyone. In first grade, some children will be reading and spelling while others may know only a few letters and have no reading skills. The nonreaders will need much more PA and letter instruction than those already reading" (National Reading Panel, 2000, P. 2-33).**

**"The PA skill thought to be important for developing word memory is being able to segment pronunciations into phonemes that link to graphemes" (National Reading Panel, 2000, p. 2-13).**

**"Teaching children to manipulate phonemes using letters produced greater effects than teaching without letters (National Reading Panel, 2000, p.2-4).**

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**Although the need for early identification is not controversial, identifying valid measures that can be used with pre-readers has yet to be accomplished. One promising approach is the use of fluency tasks that measure subword skills (e.g., letter names and letter sounds; Kame'enui & Simmons, 2001; Kaminski & Good, 1996; Olson, Wise, Johnson, & Ring, 1997). By fluency, we mean the speed and accuracy with which multiple exemplars can be produced orally. From this perspective, fluency tasks are distinguished from Rapid Automatized Naming tasks (RAN; Denckla & Rudel, 1976; Wolf**

**& Bowers, 1999) in that the latter use only a few presumably known stimuli (e.g., five letters), whereas fluency measures use many exemplars (e.g., all or most letters of the alphabet).**

Speece, D.L., Mills, C., Ritchey, K.D., & Hillman, E. (2003). Initial evidence that letter fluency tasks are valid indicators of early reading skill. *Journal of Special Education, 36*, 223-233.

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**Juel (1988) found that the probability of a poor reader in first grade remaining a poor reader at the end of fourth grade was .88. Satz, Fletcher, Clark, and Morris (1981) found that 93.9% of severely poor readers in second grade continued to be poor readers in fifth grade. Scarborough (1998b) found similar results for students from second grade to eighth grade.**

Satz, P., Fletcher, J. M., Clark, W., & Morris, R. (1981). Lag, deficit, rate and delay constructs in specific learning disabilities: A re-examination. In A. Ansara, N. Geschwind, A. Galaburda, M. Albert, & N. Gartrell (Eds.), Sex differences in dyslexia (pp. 129-150). Towson, MD: The Orton Dyslexia Society. Scarborough, H. S. (1998b). Predicting the future achievement of second graders with reading disabilities: Contributions of phonemic awareness, verbal memory, rapid naming, and IQ. Annals of Dyslexia, 48, 114-136.

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**Two larger questions arise from this analysis. First, are standard scores too strict an index for measuring the progress of very disabled readers? Not only do these readers need to make progress commensurate with the amount of time elapsed between pre- and posttesting, but they also need to gain above and beyond this to effect a change in standard score. In other words, a standard score that remains unchanged in actuality may represent a gain in skill for the very severely impaired reader. It is important, then, in discussing the progress of students with disabilities, that raw scores be presented along with standard scores, or that criterion-referenced and experimental tasks be used along with standardized measures. This does not obviate the need to know, report, and work to change standardized scores. Indeed, as Torgesen (2001) has recently noted, one of the most important indices of an intervention's efficacy is whether it can raise a child's performance in standardized scores.**

Deeney, T., Wolf, M., & Goldberg O'Rourke, A. (2001). "I like to take my own sweet time": Case study of a child with naming-speed deficits and reading disabilities. *The Journal of Special Education, 35*, 145-155.

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**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** (National Reading Panel, 2000, p.34).

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**All children with dyslexia showed distinctly aberrant activation profiles featuring little or no activation of the posterior portion of the superior temporal gyrus (STGp), an area normally involved in phonologic processing, and increased activation of the corresponding right hemisphere area. … After intervention that produced significant improvement in reading skills, activity in the left STGp increased by several orders of magnitude in every participant. No systematic changes were obtained in the activation profiles of the children without dyslexia as a function of time.**

Simos, P., Fletcher, J., Bergman, E., Breier, J., Foorman, B., Castillo, E., Davis, R., Fitzgerald, M., & Papanicolaou, A. (2002). Dyslexia-specific brain activation profile becomes normal following successful remedial training. *Neurology, 58*, 1203-1212.

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**Research has demonstrated consistently that the number of words students read correctly in 1 minute provides a reliable and valid measure of overall reading ability (Fuchs, Fuchs, & Maxwell, 1988; Potter & Wamre, 1990; Shinn, Good, Knutson, Tilly, & Collins, 1992)**

Baker, S., Gersten, R., & Keating, T. (2000). When less may be more: A 2-year longitudinal evaluation of a volunteer tutoring program requiring minimal training. *Reading Research Quarterly, 35*, 494-514.

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**Shinn et al. (1992) conducted a confirmatory factor analysis of Oral Reading Fluency and concluded that in the early grades the measure was as valid an indicator of reading comprehension as it was an indicator of decoding ability.**

Shinn, M.R., Good, R.H., Knutson, N., Tilly, W.D., & Collins, V. (1992). Curriculum-based measurement of oral reading fluency: A confirmatory analysis of its relation to reading. *School Psychology Review, 21*, 459-479.

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**Findings are consistent with previous studies showing the value of Corrective Reading and Reading Mastery for overall improvement of early elementary school students' reading skill (Adams & Engelmann, 1996). Improvements in decoding skills (i.e., letter-word identification and word attack) significantly predicted improvements in oral reading fluency. Students who initially spoke little English benefited from the program as much as other Hispanic Students.**

Gunn, G., Biglan, A., Smolkowski, K., & Ary, D. (2000). The efficacy of supplemental instruction in decoding skills for Hispanic and non-Hispanic students in early elementary school. *The Journal of Special Education, 34*, 90-103.

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**If pressed to provide an estimate of the likely progress of older low-progress readers (Years 5 to 8) who are at least two years behind in terms of reading skill, and who are offered either no or only limited non-intensive remedial support, then we would conclude that progress of about half normal rate is probably typical.**

Wheldall, K., & Beaman, R. (2000). *An evaluation of MULTILIT: 'Making Up Lost Time In Literacy'.* Canberra: Department of Education, Training and Youth Affairs.

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**We would also wish to emphasise that there is perhaps unnecessary pessimism concerning the prognosis for older low-progress readers. We support the desirability of a preventative early intervention approach to reading difficulties but some low-progress readers will still slip through the net and early intervention is not always effective. Similarly, 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.

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**The meaning of being functionally literate in the mainstream**
**The term 'functional literacy' refers to the minimum levels of reading and writing skill necessary to get by in the everyday world of work and social activities and represents, crudely, performance at the level of the average 10-11 year old, say, in Year 5. We suggest that this be regarded as the absolute minimum level to which we should aspire for all primary students, including low-progress readers, by the time they leave primary school in Year 6. The data we have available on the WARP at this stage suggests that mid-Year 5 level approximately equates to around 135 words read correctly per minute which may be regarded as an appropriate minimum target for low-progress readers to reach.**

Wheldall, K., & Beaman, R. (2000). *An evaluation of MULTILIT: 'Making Up Lost Time In Literacy'.* Canberra: Department of Education, Training and Youth Affairs.

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**What then is this minimum level of competence? Wheldall and Madelaine (1997) found little guidance from the literature apart from a study on adult literacy by Goyen in 1977. She estimated that functional literacy corresponds to a reading age of approximately 10 years 3 months. Since a reading age range is probably more appropriate than a precise reading age, we may make a best guess that a functional level of literacy is reflected in a reading age of around ten to ten and a half years, and is achieved by most students by the end of Year 5. … Text at a functional level of literacy, therefore, can be said to contain on average 135 syllables per 100 words and have sentences which contain, on average, 10 words.**

Stacey, S., & Wheldall, K. (1999). Essential constituents of effective reading instruction for low progress readers. *Special Education Perspectives, 8*(1), 44-58.

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**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.

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**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

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**Thirty-two percent of U.S. fourth-graders report that they never or almost never read for fun outside of school, a significantly higher percentage than the international average of 18 percent. Fourth-graders who regularly read for fun have higher average reading scores than those who never or almost never read for fun.**

Ogle, L., Sen, A., Pahlke, E., Jocelyn, L., Kastberg, D., Roey, S., and Williams, T. (2003). *International Comparisons in Fourth-Grade Reading Literacy: Findings from the Progress in International Reading Literacy Study (PIRLS) of 2001* (NCES 2003—073). U.S. Department of Education, NCES. Washington, DC: U.S. Government Printing Office.

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**Direct instruction in phonological awareness improved the reading performance of children with reading difficulties over time. However, direct instruction in phonological awareness in conjunction with explicit training in specific metalinguistic concepts and metacognitive strategies was more advantageous overall**

Wright, J., & Jacobs, B. (2003). Teaching phonological awareness and metacognitive strategies to children with reading difficulties: A comparison of the two instructional methods. *Educational Psychology, 23*(1), 17-45.

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**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

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**Third grade, even fourth grade is the criteria because, in the past, investigators have found a drop-off in standardized test scores as FRL students moved from first grade to third and fourth grade. Jeanne Chall has labeled this phenomenon "the 4th grade slump." Standardized tests in reading begin with a focus on decoding in 1st grade and shift to a focus on reading comprehension in 3rd grade and higher. So success, for a program with students from poor families must involve nothing less than helping students read at grade level, on standardized tests, at the end of 3rd grade and higher**

Rosenshine, B. (2002). Helping students from low-income homes read at grade level. *Journal for Students Placed at Risk, 7*. Retrieved 19/3/03 from http://faculty.ed.uiuc.edu/rosenshi/Helping%20at-risk%20readers.htm

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**Reading Mastery is an extremely effective program for teaching decoding to all children. The mean score for 171 students across six DI schools, who began the program in kindergarten and who remained in the program for four years was at the 49th percentile. I think this is a wonderful finding.**

Rosenshine, B. (2002). Helping students from low-income homes read at grade level. *Journal for Students Placed at Risk, 7*. Retrieved 19/3/03 from http://faculty.ed.uiuc.edu/rosenshi/Helping%20at-risk%20readers.htm

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- **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

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**"If the role of inadequate instruction is taken seriously, and more aggressive attempts are made to teach all children to read, the meaning of disability could change in the future. In this scenario, the actual diagnosis of LD could be reserved for children whose reading or other academic problems are severe and intractable."** Lyon, R. quoted in Rethinking Special Education report

Johnson, K.A. (2003). *Time to refocus special education on reading achievement*. Mackinac Center for Public Policy. Retrieved 26/2/2003 from http://www.mackinac.org/5000

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**The vocabulary of the average American 14-year-old has dropped from 25,000 words to 10,000.**

Roberts, P.C. (2003, Feb 18). Education's nemesis. Washington Times. Retrieved 20/3/2003 from http://dynamic.washtimes.com/twt-print.cfm?ArticleID=20030218-73449555

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**At pre-school age, no clear differences emerged in motivational orientations. … all analyses revealed distinctly different developmental patterns of motivation as a function of reading career … the regressive reading groups displayed lower task orientation, and higher ego-defensiveness and social dependency over age than progressive reading career groups. P.171**

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.

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**" … a number of studies have provided evidence that when direct comparisons are made between measures of onset–rime awareness and phoneme awareness taken at the same time, phoneme awareness proves to be the more powerful predictor of children's reading skills."**

Hulme, C., Hatcher, P.J., Nation, K., Brown, A., Adams, J., & Stuart, G. (2002). Phoneme awareness is a better predictor of early reading skill than onset–rime awareness. *Journal of Experimental Child Psychology, 82*, 2–28.

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**Early in development, however, spelling is thought by some researchers to be easier than reading, based on their experiences with older pre-school children who were using invented spellings (Bissex, 1980; Chomsky, 1971, 1979; Montessori, 1964), and to be a facilitator (Frith, 1985) or contributor (Cataldo & Ellis, 1990; Shanahan, 1984) to reading development in normal progress children. p.179**

Fletcher-Flinna, C.M., & Thompson. G. B. (2000). Learning to read with underdeveloped phonemic awareness but lexicalized phonological recoding: A case study of a 3-year-old. *Cognition, 74,* 177-208.

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**We propose that relations between phonemic awareness and spelling skills are bidirectional: Spelling influenced growth in phonemic awareness and phonemic awareness contributed to growth in spelling skills.**

Hecht, S.A, & Close, L. (2002). Emergent literacy skills and training time uniquely predict variability in responses to phonemic awareness training in disadvantaged kindergartners. *J. Experimental Child Psychology, 82*, 93–115.

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**For the novice alphabetic reader, the ability of analyzing syllables into phonemes provides the background from which initial reading skills develop; for the more experienced alphabetic reader, such an ability fine tunes his/her sensitivity to syllable construction and helps improve pronunciation accuracy.**

Cheung, H. (1999). Improving phonological awareness and word reading in a later learned alphabetic script. *Cognition, 70*(1), 1-26.

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**40% of the errors on math achievement tests are reading errors (Barton, 2003)**

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**"At third grade, we can predict 75% of those who will graduate and 70% of those who will drop out of high school primarily from their high and low reading and language skills."**
Lloyd, D.N. (1978). Prediction of school failure from third grade data. *Educational and Psychological Measurement, 38*, 1193-1200.

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**".....as the last of the primary grades, the third grade is the point at which basic reading skills have been taught (and hopefully learned), as well as the grade in which it has been estimated that 50% of future achievement patterns have been set." (Predictive factors other than reading include IQ, retention, and GPA.)**
Lloyd, D.N. (1978). Prediction of school failure from third grade data. *Educational and Psychological Measurement, 38*, 1193-1200.

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**Dysfluent reading in the absence of spelling difficulties was associated only with a naming speed deficit—assessed at school entrance—but not with phonological memory or phonological awareness deficits. In contrast, a specific spelling deficit was preceded by phonological deficits.**
Wimmer, H., & Mayringer, H. (2002). Dysfluent reading in the absence of spelling difficulties. *Journal of Educational Psychology, 94*, 272-277.

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**"The authors compared the influence of text difficulty—reading-level matched or grade-level matched—on the growth of poor readers' reading ability over 18 weeks of 1-to-1 tutoring. Forty-six 3rd–5th graders, including 25 with disabilities, were assigned randomly to 1 of 2 tutoring approaches or a control condition. Significant differences favored tutored children. Between approaches, the only significant difference was oral reading fluency, which favored students who read material at their reading level. Students who began with lower fluency made stronger gains in text matched to reading level; students with higher fluency profited from both treatments. When the 3 groups were combined, fluency was the strongest contributor to reading comprehension outcomes."**
O'Connor, R.E., Bell, K.M., Harty, K.R., Larkin, L.K., Sackor, S.M., & Zigmond, N. (2002). Teaching reading to poor readers in the intermediate grades: A comparison of text difficulty. *Journal of Educational Psychology, 94*, 474-485.

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**" … the latest brain research for education policy is basically not ready for prime time. On the other hand, a lot of what some of the more exciting brain research being done today is reinforcing behavioral and developmental research. ... In fact, behavioral research is brain research. We know about brain function by looking at behavior. All this behavior and development we've been studying for decades is not coming from the pancreas".**
Shonkoff, J.P. & Phillips, D.A. (Eds). (2000). From neurons to neighborhoods: The science of early childhood development. [On-Line]. Available at: http://www.nap.edu/catalog/9824.html

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**A combined analysis of all 208 UK families confirmed that chromosome 18 is probably a general risk factor for dyslexia, influencing several reading-related processes, such as single word–reading, but most strongly - phonemic awareness**
Fisher, S.E., Francks, C., Marlow, A.J., MacPhie, I.L., Newbury, D.F., Cardon, L.R., Ishikawa-Brush, Y., Richardson, A.J., Talcott, J.B., Gayán, J., Olson, R.K., Pennington, B.F., Smith, S.D., DeFries, J.C., Stein, J.F. & Monaco, A.P. (2001). Independent genome-wide scans identify a chromosome 18 quantitative-trait locus influencing dyslexia, *Nature Genetics, 30*, 86 – 91.

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**Results obtained from behavioral genetic model–fitting analyses of data from parents and their children tested at age 16 are consistent with results of studies of twins and siblings indicating that individual differences in reading performance are due substantially to genetic influences.**
Wadsworth, S.J., Corley, R.P., Hewitt, J.K., Plomin, R., DeFries, J.C. (2002). Parent-offspring resemblance for reading performance at 7, 12 and 16 years of age in the Colorado Adoption Project. *Journal of Child Psychology and Psychiatry, 43*, 769-774.

**Thus, a first recommendation to educators who want to improve students' comprehension skills is to teach them to decode well. Explicit instruction in sounding out words, which has been so well validated as helping many children to recognize words more certainly (e.g., Snow, Burns, & Griffin, 1998, online document), is a start in developing good comprehenders - but it is just a start. Word-recognition skills must be developed to the point of fluency if comprehension benefits are to be maximized.**
Pressley, M. (2001, September). Comprehension instruction: What makes sense now, what might make sense soon. *Reading Online, 5*(2). Available:
http://www.readingonline.org/articles/art_index.asp?HREF=/articles/handbook/pressley/index.html

**Scaffolding error – when an error shares some or most of the sounds of the target word (e.g., 'bark' misread as 'bank') is a strong predictor of reading success. Errors that retain meaning but not initial and final phonemes ("people" for "crowd") were not correlated with accurate word reading ability.**
Savage, R., Stuart, M. & Hill, V. (2001). The role of scaffolding errors in reading development: Evidence from a longitudinal and a correlational study. *The British Journal of Educational Psychology, 71*, 1-13.

**The way you interpret what the child does will reflect what you understand reading to be. For instance, if she reads the word *feather* for *father*, a phonics-oriented teacher might be pleased because she's come close to sounding the word out.**
**However, if you believe reading is a meaning-seeking process, you may be concerned that she's overly dependent on phonics at the expense of meaning. You'd be happier with a miscue such as *daddy*, even though it doesn't look or sound anything like the word in the text. At least the meaning would be intact. p.19**
Baskwill, J., & Whitman, P. (1988). Evaluation: Whole language, whole child. New York: Scholastic.

**"It is intolerable that around 1 in 5 people in the world still do not have access to literacy skills. In a world constructed around the assumption that everyone has the basic skills of literacy and where literacy and freedom are indissolubly linked, to be illiterate is to be unfree."**
Koïchiro Matsuura, Director-General of UNESCO, Message for International
Literacy Day

**During reading, the decoding of words always takes place before the understanding of words, sentences or whole texts. Sophisticated eye movement and brain research [event related potential (ERP) studies] have convincingly demonstrated this. The eyes fixate on a word for about 250 milliseconds. During this time, a number of processes occur close together in time, but nevertheless, in a set sequence. The visual shape of each letter is recognised, each letter is translated into its sound equivalent, the sounds are assembled together to arrive at a mental sound equivalent for the whole word, and finally, the meaning of the word is accessed.**

**Semantic processing occurs last (e.g. Lee, Rayner & Pollatsek, 1999: Sereno, Rayner, & Posner, 1998; Perry & Ziegler, 2002). As readers become more adept, instead of letter-by-letter symbol-to-sound translation occurring in a series, it has been shown that this process speeds up, and gradually groups of letters, common spelling patterns, and high frequency words begin to be recognised all at once, in parallel (Aghababian & Nazir, 2000; Jared, Levy & Rayner, 1999).**

**Pictures and guessing play no part in any of the word reading processes that occur. Nor is the use of context among the processes that occurs during an initial eye fixation. Only after an initial eye fixation occurs, and only on the occasions where word meaning is in doubt, do the eyes regress back over the preceding text to use context as an aid to meaning. These particular regressions constitute a post reading strategy that may occur afterwards: in effect, a non-reading strategy used to confirm meaning, not to extract it in the first place.**
Macmillan, B. (2002). An evaluation of the Government's Early Intervention Initiative: The Early Literacy Support programme. *Reading Reform Foundation Newsletter, 49.* [On-Line]. Available:
http://www.rrf.org.uk/49%20Bonnie%20MacMillan%20Article.htm

**Regarding the reading comprehension issue, one should bear in mind the following: "Crowley et al. have demonstrated the relationship between automation of cognitive processes and the emergence of metacognitive thinking. They found that kindergarten children were most likely to think "metacognitively" when a lower level cognitive skill became automated."**

Crowley, K., Shrager, J. & Siegler, R. S. (1997). Strategy discovery as a competitive negotiation between metacognitive and associative mechanisms. *Developmental Review, 17*, 462-489.

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**The 96 lowest-achieving 2nd grade readers from 7 schools were randomly assigned to time-equated treatments over 4 months: word reading; comprehension; combined word reading and comprehension; and repeated reading. Of the treatments, combined was the most superior to the control (effect sizes, 1.24, real word, 1.1, pseudoword reading). All treatments improved in word reading and comprehension, and accuracy and rate of word reading (or text reading) uniquely predicted each of 5 measures selected for text-based and situation-based comprehension, which loaded on one factor (cf1=1.00).** *Conclusion: Word reading accuracy and rate constrain comprehension, but word reading and comprehension also exert reciprocal influences that enable each other.*

Berninger, V.W. (2001). A simple story for the simple view of reading instruction. Paper presented at the conference of the Society for the Scientific Study of Reading, May 31-June3, 2001, Regal Harvest House Hotel, Boulder, Colorado.

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**A combination of direct instruction and wide reading is ideal for encouraging literacy in students.**

Greenwood, S.C. (2002 May/Jun). Making words matter: Vocabulary study in the content areas. *The Clearing House, 75*(5), 258-263.

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**Content area teachers cannot leave development of vocabulary to chance. The research is deceptively simple in that wide reading accounts for the bulk of vocabulary gain (Anderson and Freebody, 1983; Johnson, 2001).**

Johnson, D.D. (2001). *Vocabulary in the elementary and middle school*. Needham Heights, MA: Allyn and Bacon.

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**Based on a recent review of 23 research reports on the characteristics of students who are unresponsive to early literacy intervention, Al-Otaiba and Fuchs (in press) found that most unresponsive students were characterized by deficits in phonological awareness. Other characteristics identified less consistently included deficits in phonological retrieval or encoding, verbal ability, behavior problems, or developmental delays. Al-Otaiba and Fuchs suggested that future research address a common definition of "treatment unresponsiveness" (e.g., reading fluency below 40 words per minute), and that more attention be given to characteristics such as phonological memory and low IQ, and to the training and fidelity of treatment implementation of trainers.**

Al-Otaiba, S. D., & Fuchs, D. (2002). Characteristics of children who are unresponsive to early literacy intervention: A review of the literature. *Remedial and Special Education, 23*(5) 300-316.

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**If we adopt the 30th percentile as a standard for adequate reading progress, then the proportion of the total population remaining at risk in spite of the best interventions tested to date ranges from 5 percent to 7 percent (Torgesen, 1998).**

Torgesen, J.K. (1998, Spring/Summer). Catch them before they fall: Identification and assessment to prevent reading failure in young children**.** *American Educator*. [On-Line]. Available: http://www.ldonline.org/ld_indepth/reading/torgeson_catchthem.html.

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**"although the evidence for a visual deficit appears strong and convincing, a coherent theory is required to make the case that it is more than an accidental concomitant, or a marker for, reading disability" (**Hogben, 1997, p.68)**.** Hogben, J. (1997). How does a visual transient deficit affect reading? In Charles Hulme & Margaret Snowling (Eds.). *Dyslexia: Cognition and intervention*. London: Whurr.

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**It is estimated that an adult writer knows how to spell between 10,000 and 20,000 words. By way of contrast, in the most conscientious spelling curriculum (i.e., weekly "spelling lists" of words to be memorized), a child is explicitly taught approximately 3,800 words during the elementary years (Graham, Harris, & Loynachan, 1996). In this discrepancy lies the crux of much of the debate on spelling instruction. How much of spelling is "taught" and how much is "caught"?**
Scott, C.M. (2000). Principles and methods of spelling instruction: Applications for poor spellers. *Topics in Language Disorders, 20*, 66- 79.

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**"Only two possible escapes can save us from the organized mayhem of our dark potentialities--the side that has given us crusades, witch hunts, enslavements, and holocausts. Moral decency provides one necessary ingredient, but not nearly enough. The second foundation must come from the rational side of our mentality. For, unless we rigorously use human reason both to discover and acknowledge nature's factuality, and to follow the logical implications for efficacious human action that such knowledge entails, we will lose out to the frightening forces of irrationality, romanticism, uncompromising "true" belief, and the apparent resulting inevitability of mob action. Reason is not only a large part of our essence; reason is also our potential salvation from the vicious and precipitous mass action that rule by emotionalism always seems to entail. Skepticism is the agent of reason against organized irrationalism--and is therefore one of the keys to human social and civic decency."**
Gould, S. J. (1997). The positive power of skepticism. Foreword in M. Shermer, Why people believe weird things: Pseudoscience, superstition, and other confusions of our time. New York: W. H. Freeman, p. x.

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**For good readers, eye movement data show fairly complete processing of the words on the page (Rayner & Pollatsek, 1989). Very few words are skipped, and if they are, they tend to be words like *the*. In all, it seems that the good reader processes almost all the print, does it very quickly, and tries to make decisions about meaning at the same time (Matthei & Roeper, 1983).**
Rayner, K., & Pollatsek, A. (1989). *The psychology of reading*. Englewood Cliffs, NJ: Prentice Hall.
Matthei, E., & Roeper, T. (1983). *Understanding and producing speech*. Bungay, Suffolk, England: Fontana.

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**Inference and prediction make it possible to leap toward meaning without fully completing the optical, perceptual and syntactic cycles. Yet the reader, once sense is achieved, has the sense of having seen every graphic feature, identified every pattern and word, assigned every syntactic pattern. (p. 835)**
Goodman, K.S. (1985). Unity in reading. In H. Singer & R.B. Ruddell (Eds.), *Theoretical models and processes of reading* (pp. 813-840). Newark, DE: International Reading Association

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**"Thus, we believe that given perfection in decoding, the quality of reading will depend entirely on the quality of the reader's comprehension; if a child's listening comprehension of a text is poor, then his reading comprehension will be poor, no matter how good his decoding" (p. 244)**
Juel, C., Griffith, P.L., & Gough, P.B. (1986). Acquisition of literacy: A longitudinal study of children in first and second grade. *Journal of Educational Psychology, 78*, 243-255.

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**In <u>Reading in Junior Classes</u>, (Department of Education, 1985) it was argued that children sample the text, predict what will happen, confirm their predictions and self-correct if their predictions don't fit with the sampled text. Advice of teaching children how to sample was given: "Helping beginning readers to sample effectively means showing them how to attend only to those details of meaning and print which are necessary to make predictions, and to confirm or correct them." (p. 32)** Department of Education (1985). *Reading in junior classes: With guidelines to the revised Ready to Read Series*. Wellington: Author.

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**In a book published for the Ministry of Education Mooney (1988) argued that "Children do not learn to read in order to be able to read a book, they learn to read by reading books." (p. 3)**
Mooney, M. (1988). *Developing life-long readers*. Wellington, New Zealand: Learning Media.

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**In the United States, survey data show that the vast majority (90%) of teachers perceive themselves to be "eclectic", in that they use both whole language and phonics** (Baumann, Hoffman, Moon, & Duffy-Hester, 1998). **On the other hand, it's not clear what teachers think "phonics" is. The survey found that 2 out of 3 K-2 (kindergarten through second grade) teachers reported that they taught phonics by teaching letter-sound correspondences and "word families (e.g., cat, mat, hat, sat, fat). This is phonics teaching. The same number also reported that they used whole language techniques, for example, encouraging children to "invent" spellings, reading to children, using Big Books for instruction, providing children's literature for their pupils to read.**
Baumann, J. F., Hoffman, J. V., Moon, J., & Duffyhester, A. M. (1998). Where are teachers' voices in the phonics/whole language debate? Results from a survey of US elementary classroom teachers. *The Reading Teacher, 51*, 636-650.

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**Australian survey data also 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.

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**These findings extend into adolescence data previously reported on the persistence of reading disability,[18] that is, that children who were initially poor readers in the early school years remain poor readers relative to other children. Conclusions. Deficits in phonological coding continue to characterize dyslexic readers even in adolescence.**
Shaywitz, S.E., Fletcher, J.M., Holahan, J.M., Shneider, A.E., Marchione, K.E., Stuebing, K.K., Francis, D.J., Pugh, K.R., & Shaywitz, B.A. (1999). *Persistence of dyslexia: The Connecticut longitudinal study at adolescence*. *Pediatrics, 104*, 1351-1339.

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**From grades 2 to 6 there is no evidence of a developmental window beyond which phonological deficits cannot be effectively remediated with intensive phonological training.**
Lovett, M.W., & Steinbach, K.A. (1997). The effectiveness of remedial programs for reading disabled children of different ages: Does the benefit decrease for older children? *Learning Disability Quarterly, 20*, 189-209.

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**"In surgery, as in anything else, skill, judgment, and confidence are learned through experience, haltingly and humiliatingly. Like the tennis player and the oboist and the guy who fixes hard drives, we need practice to get good at what we do. There is one difference in medicine, though: we practise on people." (p. 55).**
Atul Gawande, 2002: "Annals of Medicine: The Learning Curve" The New Yorker, January 28.

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**These fMRI findings demonstrate that overt pseudoword reading activates brain areas common to performance of other phonological awareness tasks.**
Dietz, N., Jones, K., Zeffiro, T, & Eden, G. (2000). *Phonological processing investigated with overt pseudoword reading*. Poster session (No. 348) presented at the NeuroImage Human Brain Mapping 2000 Meeting. [On-Line]. Available at: http://www.apnet.com/www/journal/hbm2000/7033.html

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Consider this statement from Timothy Shanahan, a member of the National Reading Panel: **"It has been suggested that the NRP will consider only research drawn from a single paradigm. There is some truth in this accusation, as our major determinations will require clear experimental or quasi-experimental evidence. This, however, is not because we do not recognize the value of qualitative studies or of other quantitative methodologies, but rather because of the nature of the determinations we have been charged with making. Our job is to decide what works -- what instructional methods, procedures, or programs can be used successfully to improve reading achievement. Experiments and quasi-experiments are the only research methods that try out a technique under real classroom conditions to determine their impact on learning, and it seemed to us unreasonable to indicate that any approach "worked" if such evidence was lacking."** You can read Shanahan's entire statement at www.readingonline.org/critical/shanahan/panel.html.

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**In the September 1955 Gates blasted Flesch, accusing him of trying to "discredit American education." In the October 1955 issue of the NEA Journal, an article by Nila Banton Smith, then professor of education at NYU, reminded teachers of the important social purposes behind reading. Professor Smith wrote:**

**"We are on the brink of a new epoch in reading instruction ... In the future, reading instruction must concern itself with much more than pedagogy. It must mesh more directly with the gears of vital social problems and needs."**

National Institute of Child Health and Human Development (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction. National Reading Panel.* [On-Line]. Available at:
www.nationalreadingpanel.org/Publications/publications.htm

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**Two inescapable conclusions emerge: (a) Mastering the alphabetic principle (that written symbols are associated with phonemes) is essential to becoming proficient in the skill of reading, and (b) methods that teach this principle are more effective than those that do not (especially for children who are at risk in some way for having difficulty learning to read).**

Rayner, K., Foorman, B.R., Perfetti, C.A., Pesetsky, D., & Seidenberg, M.S. (2001). How psychological science informs the teaching of reading. *Psychological Science in the Public Interest, 2*, 31-74. [On-Line]. Available at www.psychologicalscience.org/newsresearch/publications/journals/pspi2_2.html.

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**Educators have long argued over the best way to teach reading to children. The research, however, indicates that a highly popular method is inadequate on its own. Many teachers adopted the whole-language approach because of its intuitive appeal.**

Rayner, K., Foorman, B.R., Perfetti, C.A., Pesetsky, D., & Seidenberg, M.S. (2002, March). How should reading be taught? *Scientific American, 286*, 84-91.

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**Some eye-movement studies have used homophones to demonstrate that the process of sounding out words mentally begins very rapidly after a reader's gaze first fixes on a particular word. And recent brain studies show that the primary motor cortex is active during reading, presumably because it is involved with mouth movements used in reading aloud. The process of mentally sounding out words is an integral part of silent reading, even for the highly skilled**.

Rayner, K., Foorman, B.R., Perfetti, C.A., Pesetsky, D., & Seidenberg, M.S. (2002, March). How should reading be taught? *Scientific American, 286*, 84-91.

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Morphological Awareness

**Morphological awareness involves the ability to be conscious of, talk about, and manipulate the morphological units of a language (Carlisle, 1995). It involves the ability to identify root words and their inflected or derived forms. Awareness of morphological structure plays an important role in decoding (Carlisle). Morphological awareness is crucial for recognizing unfamiliar words that cannot be decoded phonetically, allowing readers to access meaning based on their knowledge of root words, inflections, and derived forms. For example, knowledge of the derivation "-ette" allows a reader to deduce the meaning of words containing that form, such as dinette and kitchenette.**

*Although some authors suggest that students are more likely to use morphological awareness to decode words after second grade (Fowler & Lieberman, 1998), there is some evidence that children as young as 6 and 7 may tap into their emerging knowledge of morphemes for written language* **(Treiman & Cassar, 1997). By the fourth grade, most children have basic knowledge of derived forms (Windsor & Hwang, 1997). By the fifth grade, a substantial portion of a child's orthographic representations consists of forms that are derivations of root words (Anglin, 1993). Thus, morphological awareness appears to be a crucial reading tool as students encounter increasingly complex texts beyond the primary grades (Shankweiler, Lundquist, Dreyer, & Dickinson, 1998).**

Apel, K. & Swank, L.K. (1999). Second chances: Improving decoding skills in the older student. *Language, Speech & Hearing Services in Schools, 30*, 231-243.

**Past research has shown that developing readers require as little as four exposures to a word to develop a VOI (Ehri & Saltmarsh, 1995; Reitsma, 1983). Once VOIs are established, readers bypass the relatively slower act of decoding and more quickly access the mental representation of a word to comprehend its meaning (Bruck. 1990; Ehri, 1997; Kamhi & Catts, 1999). Relying on VOIs to read words decreases the need for decoding, leading to better comprehension.** *Also, these mental images stored in memory may be used during future decoding attempts, serving as analogs when reading other unfamiliar, yet orthographically similar words (Ehri, 1997).*

Ehri, L. C. (1997). Learning to read and learning to spell are one and same, almost. In C. A. Perfetti, L. Rieben, & M. Fayol (Eds.). *Learning to spell: Research, theory and practice across languages* (pp. 237-270). Mahwah, NJ: Erlbaum.

Apel, K. & Swank, L.K. (1999). Second chances: Improving decoding skills in the older student. *Language, Speech & Hearing Services in Schools, 30*, 231-243.

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**'The first alternative and preference is - to skip over the puzzling word. The second alternative is to guess what the unknown word might be. And the final and least preferred alternative is to sound the word out. Phonics, in other words, comes last.' (p.66).**

Smith, F. (1979). *Reading without nonsense*. New York: Teachers College Press.

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**'Unpredictability is not the exception in English spelling-sound correspondences, it is the rule' (p.152).** Smith, F. (1999). Why systematic phonics and phonemic awareness instruction constitute an educational hazard. *Language Arts, 77*, 150-155.

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**Initial consonants and consonant clusters, used with syntactic and semantic information, usually provide sufficient information for word recognition and reading for meaning. Teaching children to sound out words letter by letter is unnecessary and confusing. In learning phonics children best acquire phonic and related knowledge through rich experiences with using print for real purposes.**

Emmitt, M. (1996). *Have I got my head in the sand? - Literacy matters*. In 'Keys to life' Conference proceedings, Early Years of Schooling Conference, Sunday 26 & Monday 27 May 1996, World Congress Centre, Melbourne' pp. 69- 75. Melbourne: Directorate of School Education. [On-Line]. Available: http://www.sofweb.vic.edu.au/eys/pdf/Proc96.pdf

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**"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

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**Children with phonemic awareness are able to discern that *camp* and *soap* end with the same sound, that *blood* and *brown* begin with the same sound, or, more advanced still, that removing the /m/ from *smell* leaves *sell*.**

Snow, C.E., Burns, S., & Griffin, P. (Eds.) (1998). *Preventing reading difficulties in young children. Report of the National Research Council*. [On-Line]. Available at: http://www.nap.edu/readingroom/books/reading/.

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**According to Carroll, Davies, and Richman (1971) and Adams (1990), if children successfully negotiate all the texts normally encountered by the end of third grade, they are expected to recognize and know well over 80,000 different words.**

Hiebert, E. H., & Pearson, P. D. (2000). Building on the past, bridging to the future: A research agenda for the Center For The Improvement Of Early Reading Achievement. *Journal of Educational Research, 93*(3): 133-144. [On-Line]. Available: http://www.ciera.org/ciera/publications/online-at-ciera/99-03/art-online-99-03.html

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**The 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 Australian Bureau of Statistics (1998). Education and training in Australia. Canberra: ABS Cat. no. 4224.0.**

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**Low literacy is strongly related to unemployment, poverty, and crime. About 43 percent of those with the lowest literacy skills live in poverty, and 70 percent of the prison population falls into the two lowest levels of reading proficiency.** 1998 National Institute for Literacy Fact Sheet.

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**What better proof that children are being wrongly labelled as needing special education than in rural Wilkes County? At Washington-Wilkes Elementary, the number of pupils referred to special education programs dropped an estimated 30 percent after Reading First, a reading-intensive program, was implemented.**
Beverley H Johns *Atlanta Journal-Constitution* Monday, October 29, 2001

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**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**.**

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**The average number of new words learned in a year - about 3,000 to 4,000. The average number of new words taught directly in a year - about 300 to 500.**
Osborn, J.H. & Armbruster, B.B. (2001). Vocabulary acquisition: Direct teaching and indirect learning. *Basic Education Online Edition, 46*(3). Retrieved 5/8/2003 from
http://www.c-b-e.org/be/iss0111/a2osborn.htm

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**According to the National Reading Panel (2000), estimates of students' vocabulary size imply that most of a student's vocabulary is learned in contexts other than formal learning, especially independent reading.** 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

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**"Dynamic/interactive assessment was more accurate in reflecting the learning potential of children than static tests, particularly with learning-disabled and minority children."**
Tzuriel, D. (2000). Dynamic assessment of young children: Educational and intervention perspectives *Educational Psychology Review, 12,* 385-435.

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**"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

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**"… the phonic aspect of word level work is not always being systematically taught or given the emphasis that it requires" (p. 3).**
Office for Standards in Education. (1998). Her Majesty's Chief Inspector of Schools in England.
http://www.standards.dfes.gov.uk/literacy/publications/?pub_id=119&atcl_id=643

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**Scaffolding error – when an error shares some or most of the sounds of the target word (e.g., 'bark' misread as 'bank') is a strong predictor of reading success. Errors that retain meaning but not initial and final phonemes ("people" for "crowd") were not correlated with accurate word reading ability.**

Savage, R., Stuart, M. & Hill, V. (2001). The role of scaffolding errors in reading development: Evidence from a longitudinal and a correlational study. *The British Journal of Educational Psychology, 71*, 1-13.

**Independent reading – 90th percentile 21 minutes per day or 4.4 million words per year, 50th percentile 4.6 minutes per day or 280, 000 words per year, 10th percentile 0.1 minutes per day or 8000 words per year.** Anderson, R.C., Wilson, P.T., & Fielding, L.G. (1988). Growth in reading and how children spend their time outside of school. *Reading Research Quarterly, 23*, 285-303.

**There are about 87000 different word forms in English. Speech is lexically impoverished - the average frequency in all oral language situations is in the 400-600 range. In children's books the average word is at 627th in frequency.** Cunningham, A.E., & Stanovich, K.E. (2001). What reading does for the mind. *Journal of Direct Instruction, 1*, 137-149.

**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 major longitudinal study (Project Follow Through - $1 billion over nearly three decades) of more than 15,000 students, Direct Instruction showed the greatest positive impact on all three types of development assessed – basic skills, problem solving, and self esteem.** Association of American Educators. (2001*). Project Follow Through*. [On-Line]. Available: http://www.aaeteachers.org/follow.html

**Phonological coding is defined by Swank [1994] as "the ability to code abstract representations of the sound attribute of spoken and written words in the form of individual units of speech known as phonemes".** Swank, L. K. (1994). Phonological coding abilities: Identification of impairments related to phonologically based reading problems. *Topics in Language Disorders, 14*(2), 56-71.

**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.

**Deficits in phonological coding continue to characterize dyslexic readers even in adolescence; performance on phonological processing measures contributes most to discriminating dyslexic and average readers, and average and superior readers as well. These data support and extend the findings of previous investigators indicating the continuing contribution of phonological processing to decoding words, reading rate, and accuracy and spelling. Children with dyslexia neither spontaneously remit nor do they demonstrate a lag mechanism for catching up in the development of reading skills. In adolescents, the rate of reading as well as facility with spelling may be most useful clinically in differentiating average from poor readers.** Shaywitz, S.E., Fletcher, J.M., Holahan, J.M., Shneider, A.E., Marchione, K.E., Stuebing, K.K., Francis, D.J., Pugh, K.R., Shaywitz, B.A. (1999). Persistence of dyslexia: The Connecticut longitudinal study at adolescence. *Pediatrics, 104*, 1351-9.

**"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."**

Department of Education, Employment and Training. In The Age, Literacy Week Supplement, p.3 29/8/01.

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**The study found that a student who had the good fortune to have effective teachers three years in a row averaged 50% more learning than one having poor teachers over a three-year span.**
Sanders, W. & Rivers, J. (1996). Cumulative and residual effects of teachers on future student academic achievement, 1996 (Available from UTVARC, 225 Morgan Hall, P. O. Box 1071, Knoxville, TN 37901-1071).

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**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."**

**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

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**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.

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**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.

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**A central part of text processing involves reading the words. Four different ways can be distinguished (Ehri, 1991, 1994): 1. Decoding: Readers convert letters into sounds and blend them to form recognizable words; the letters might be individual letters, or digraphs such as TH, SH, OI, or phonograms such as ER, IGH, OW, or spellings of common rimes such as -AP, -OT, -ICK. Ability to convert letter subunits into sounds comes from readers' knowledge of the alphabetic system. 2. Sight: Readers retrieve words they have already learned to read from memory. 3. Analogy: Readers access in memory words they have already learned and use parts of the spellings to read new words having the same spellings (e.g., using -ottle in bottle to read throttle). 4. Prediction: Readers use context cues, their linguistic and background knowledge, and memory for the text to anticipate or guess the identities of unknown words.**

**Text reading is easiest when readers have learned to read most of the words in the text automatically by sight because little attention or effort is required to process the words. When written words are unfamiliar, readers may decode them or read them by analogy or predict the words, but these steps take added time and shift attention at least momentarily from the meaning of text to figuring out the words. Readers need to learn how to read words in the various ways to develop reading skill. The primary way to build a sight vocabulary is to apply decoding or analogizing strategies to read unfamiliar words. These ways of reading words help the words to become familiar.**

**Processing letter-sound relations in the words through decoding or analogizing creates alphabetic connections that establish the words in memory as sight words (Ehri, 1992; Share, 1995). Systematic phonics instruction is thought to contribute to the process of learning to read words in these various ways by teaching readers use of the alphabetic system. Alphabetic knowledge is needed to decode words, to retain sight words in memory, and to call on sight word memory to read words by analogy. In addition, the process of predicting words from context benefits from alphabetic knowledge. Word prediction is made more accurate when readers can combine context cues with letter-sound cues in guessing unfamiliar words in text (Tunmer & Chapman, 1998).**
National Institute of Child Health and Human Development (2000). *National Reading Panel: Teaching children to read*. [On-Line]. Available: http://www.nationalreadingpanel.org.

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**For children with learning disabilities and children who are low achievers, systematic phonics instruction, combined with synthetic phonics instruction produced the greatest gains.** National Institute of Child Health and Human Development (2000*). National Reading Panel: Teaching children to read*. [On-Line]. Available: http://www.nationalreadingpanel.org.

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**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.**
National Institute of Child Health and Human Development (2000*). National Reading Panel: Teaching children to read*. [On-Line]. Available: http://www.nationalreadingpanel.org.

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**Although their handicapping condition may be invisible to educators, nonetheless there is a physical basis for dyslexia--in genes (e.g., Cardon et al., 1994; De Fries, Fulker, & LaBuda, 1987; Grigorenko et al., 1997; Olson, Forsberg, & Wise, 1994; Pennington et al., 1991; Smith, Kimberling, Pennington, & Lubs, 1983) and in the metabolic activity of the brain (e.g., Shaywitz, Shaywitz et al., 1998; Richards et al., 1999). There are also behavioral signs very early in the process of learning to read that educators should take seriously and not dismiss, that is, assume that the problems will go away with maturation. These are inordinate difficulty (not just the typical learning curves) in learning to name and write alphabet letters and in learning to associate sounds with letters. All the boys in this study demonstrated these early warning signs, which should prompt educators to refer children for evaluation.**
Berninger, V.W. (2000). Dyslexia, the invisible, treatable disorder: The story of Einstein's NINJA turtles. *Learning Disability Quarterly, 23,* 175- 198.

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**We found that extended practice was particularly important toward increasing the magnitude of treatment outcomes.**
Swanson, H.L. (2001). Research on interventions for adolescents with learning disabilities: A meta-analysis of outcomes related to higher-order processing. *The Elementary School Journal, 101*, 331-348.

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**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.

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**It has long been assumed that once a student is past the primary grades, phonological processing is no longer critical to word identification and to reading. Our data support the view that across the life span, from childhood to adolescence, decoding words reflects primarily, phonological, rather than orthographic coding. Such findings are consonant with what is becoming overwhelming evidence that phonological mechanisms mediate word identification in all readers, whether beginners or experienced readers**[46,47].
Shaywitz, S.E., Fletcher, J.M., Holahan, J.M., Shneider, A.E., Marchione, K.E., Stuebing, K.K., Francis, D.J., Pugh, K.R., & Shaywitz, B.A. (1999). *Persistence of dyslexia: The Connecticut longitudinal study at adolescence*. *Pediatrics, 104*, 1351-1339.

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**These findings extend into adolescence data previously reported on the persistence of reading disability [18] that is, that children who were initially poor readers in the early school years remain poor readers relative to other children in the sample. This finding suggests that shortly after school entry, the reading achievement of children changes very little relative to their peers. These special services, however, consisted of eclectic approaches to teaching reading that were provided in an inconsistent fashion and for relatively brief periods.**
Shaywitz, S.E., Fletcher, J.M., Holahan, J.M., Shneider, A.E., Marchione, K.E., Stuebing, K.K., Francis, D.J., Pugh, K.R., & Shaywitz, B.A. (1999). *Persistence of dyslexia: The Connecticut longitudinal study at adolescence*. *Pediatrics, 104*, 1351-1339.

**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). The Washington Post 19/3/2001. [On-Line]. Available: http://www.washingtonpost.com/ac2/wp-dyn/A23845-2001Mar18?language=printer
Paulesu, E., Demonet, J-F., Fazio, F., McCrory, E., Chanoine, V., Brunswick, N., Cappa, S.F., Cossu, G., Habib, M., Frith, C.D., & Frith, U. (2001). Dyslexia: Cultural diversity and biological unity. *Science, 291*, 2165-2167.

**Because of their underlying insensitivity to word structure at the level of speech sounds, they may not easily learn the differences between words such as goal and gold, boost and boast, unanimous and anonymous. Their weak sense of word structure undermines their ability to learn the code of written English (Stanovich, 1991; Vellutino, 1991; Wagner, 1988). As time goes on, this core problem in turn compromises the learning of word meanings, comprehension of text, spelling, written expression, and motivation for language-based learning (Juel, 1994; Stanovich, 1986). Obviously, students with language-based reading disabilities are at high risk for school failure.**
Moats, L.C. (1996). Implementing effective instruction for students with LD: A challenge for the future. In Shirley C. Cramer & William Ellis (Eds.), *Learning disabilities: Lifelong issues*. pp. 87-93. Baltimore, MD: Brookes Publishing Co.

**Many children with difficulty in learning to read develop a negative self concept within their first two years of schooling.**
Chapman, J.W., Tunmer, W.E., & Prochnow, J.E. (2000). Early reading-related skills and performance, reading self-concept, and the development of academic self-concept: A longitudinal study. *Journal of Educational Psychology, 92*, 4, 703–708.

**"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.

**A recent meta-analysis (Swanson, Hoskyn, & Lee, 1999) indicated that: Instructional interventions that included the following instructional components produced the strongest impact on student learning across numerous academic areas: Control of task difficulty (i.e., sequencing examples and problems to maintain high levels of student success). Teaching students with LD in small interactive groups of six or fewer students. Directed response questioning. It involves the use of procedures that teach students to generate questions while reading or working on a scientific or mathematical problem.**
Swanson, H. L., Hoskyn, M., & Lee, C. (1999). Interventions for students with learning disabilities: A meta-analysis of treatment outcomes. New York: Guilford.

**Up to 85% of the children categorized as LD in fact have disorders of language (Kavale & Forness, 1985; Kamhi, 1989; Tallal, 1988). These language-related disorders include reading and writing disabilities.** Kamhi, A. G. (1989). Causes and consequences of reading disabilities. In A.G. Kamhi and H. Catts (Eds.), Reading disabilities: A developmental language perspective. (pp. 67-99) Boston: College Hill Press. Kavale, K.A., & Forness, S.R. (1985). The science of learning disabilities. San Diego: College Hill Press. Tallal, P. (1988). Developmental language disorders. In J.F. Kavanagh and T. J. Truss (Eds.), Learning disabilities: Proceedings of the national conference (pp. 181-272). Parkton, MD: York Press.

**"Readers, asked to imagine "cat" without the "kah" sound, readily summon "at." And the MRI photographs show their brains lighting up like pinball machines. When the brain gets it, the light bulbs really do go on. Conversely, the brains of people who can't sound out words often look different on MRI pictures. There is less blood flow to the language centers of the brain and, in some**

cases, not much activity evident at all. But simply put, without the ability to sound out words, the brain is stumped."

Lally, K. & Price, D.M. (1997). The brain reads sound by sound: 1997 SDX Awards. The Sun. On-Line at: http://www.sunspot.net/readingby9/initial.shtml

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**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.

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**From a recent meta-analysis: Instructional interventions that included the following instructional components produced the strongest impact on student learning across numerous academic areas:** *Control of task difficulty (i.e., sequencing examples and problems to maintain high levels of student success. Teaching students with LD in small interactive groups of six or fewer students. Directed response questioning. It involves the use of procedures that teach students to generate questions while reading or working on a scientific or mathematical problem. In the case of teaching adolescents with LD, extended practice with feedback was the instructional component that contributed to the size of the effect.*

Swanson, H. L., Hoskyn, M., & Lee, C. (1999). Interventions for students with learning disabilities: A meta-analysis of treatment outcomes. New York: Guilford.

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**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 to improved self-concept.**

Elbaum, B. E., & Vaughn, S. (1999, May). A meta-analysis of intervention studies for students with LD and their effects on self-concept. Paper presented at the National Council for Learning Disabilities Summit, Washington, DC.

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**Whereas in the previous field test only 30% of tutors were observed to implement the majority of the lesson activities consistent with program protocols (Vadasy et al., 1997b), in this field test 71 % of tutors were observed to be high implementors. Moreover, anecdotal evidence (e.g., tutors who increasingly followed program elements and implemented them with greater skill) suggests that the frequent supervision and technical assistance contributed to improved implementation. Obtaining more accurate program implementation was important because a previous finding had indicated a relation between fidelity of implementation and reading outcomes (Vadasy et al., 1997b).**

Vadasy, P.F., Jenkins, J.R., & Pool, K. (2000). Effects of tutoring in phonological and early reading skills on students at risk for reading disabilities *Journal of Learning Disabilities, 33*, 579-590.

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**By the end of first grade, children having difficulty learning to read begin to feel less positive about themselves than when they started school**. **Consider that by middle school, children who read well read at least 10,000,000 words during the school year. On the other hand, children with reading difficulties read less than 100,000 words during the same period. Of the ten to 15 percent of children who will eventually drop out of school, over 75% will report difficulties learning to read. Likewise, only two percent of students receiving special or compensatory education for difficulties learning to read will complete a four-year college program. Surveys of adolescents and young adults with criminal records indicate that at least half have reading difficulties, and in some states the size of prisons a decade in the future is predicted by fourth grade reading failure rates. Approximately half of children and adolescents with a history of substance abuse have reading problems**. **. We know for example, that the average middle class child is exposed to approximately 500,000 words by kindergarten; an economically disadvantaged child is exposed to half as many, at best. They**

**approach the reading of words and text in a laborious manner, demonstrating difficulties linking sounds (phonemes) to letters and letter patterns. Their reading is hesitant and characterized by frequent starts and stops and mispronunciations. Comprehension of the material being read is usually extremely poor.**
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

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Can Children With Reading Problems Overcome Their Difficulties? **Yes, the majority of children who enter kindergarten and elementary school at-risk for reading failure can learn to read at average or above levels, but only if they are identified early and provided with systematic, explicit, and intensive instruction in phonemic awareness, phonics, reading fluency, vocabulary, and reading comprehension strategies**. Failure to develop basic reading skills by age nine predicts a lifetime of illiteracy. Unless these children receive the appropriate instruction, over 70 percent of the children entering first grade who are at risk for reading failure will continue to have reading problems into adulthood. On the other hand, the early identification of children at-risk for reading failure coupled with the provision of comprehensive early reading interventions can reduce the percentage of children reading below the basic level in the fourth grade (e.g., 38 percent) to six percent or less. The NRP found that children as young as four years of age benefited from instruction in phonemic awareness and the alphabetic principle when the instruction was presented in an interesting and entertaining, albeit systematic manner. Youngsters who attended more academically oriented preschool programs had significantly higher scores in reading, math, and general knowledge when tested in the fall of their kindergarten year than children attending less academically oriented preschools. 20 million 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

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What about the early years? **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.**

**It may be that all that is required to improve the intellectual functioning and academic success of children in low SES areas is for their parents to interact with them differently: Talk to them more, Ask more questions, Explain things more fully, and Make more positive comments on their child's behavior. The problem is to help all parents provide the kinds of educational experiences that many professional parents routinely provide.**
Hart, B., & Risley, T. (1995). Meaningful differences in the everyday experiences of young American children. Baltimore: Paul H. Brookes.

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**Between 1986 and 1996, Farkas & Beron collected data on the vocabulary skills of about 7,000 children, ages 3 to 14. The study found: Preschool children who live in poverty and are not developing their vocabularies are at a significant risk of struggling academically throughout elementary and middle school specific reading instruction for preschoolers—such as letter, sound, and word recognition—can help close the learning gap between disadvantaged children and their more affluent peers**
Farkas, G., & Beron, K. (2001). *Family linguistic culture and social reproduction: Verbal skill from parent to child in the preschool and school years*. Presentation at the session on Consequences of Child Poverty and Deprivation, at the Annual Meetings of the Population Association of America, Washington, D.C., March 31. http://www.pop.psu.edu/general/pubs/working_papers/psu-pri/wp0105.pdf

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**First Lady Laura Bush launched the first White House summit on early childhood education Thursday with a call for a national effort to begin teaching children learning skills even before they**

**are old enough to read. Policies will be changed to emphasize prereading skills that can be gained through:** *shared book reading with parents, exposure to the alphabet, memorizing the sounds of letters and words, and the use of stories to draw very young children to words and books. Schools will be urged to screen children for a lack of early learning skills as they screen for hearing and vision problems.*
Houston Chronicle. (2001, July 26). First lady stresses preschool learning skills. [On-Line]. Available: http://www.HoustonChronicle.com

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**Word reading is a crucial part of our ability to comprehend written texts. However, how word meanings are extracted from print remains a topic of active research. Behavioral studies have yielded data supporting at least two contrasting hypotheses:** *Phonological processing is a necessary part of the perception of word meaning (the mediation hypothesis), and* **Perception of word meaning can bypass phonological processes (the direct perception hypothesis). Results of our MRI study suggest that active processing of word meaning engages neural systems associated with phonological processes. The results are consistent with the mediation hypothesis and suggest functional coupling of phonological processing during the perception of word meaning.**
Xu, B., et al., (1999). Functional coupling of phonological processes during the activation of word meaning: an fMRI study of visual word perception. Fifth International Conference on Functional Mapping of the Human Brain. Retrieved 11/10/2003 from http://www.apnet.com/hbm99/2548.html

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**The National Institute of Child Health and Human Development reports that it takes four times as much assistance to improve a child's reading skills if help is delayed until Year Four than if it is begun in the Prep year (p.4).**
Pfeiffer, S., Davis, R., Kellog, E., Hern, C., McLaughlin, T.F., & Curry, G. (2001).The effect of the Davis Learning Strategies on First Grade word recognition and subsequent special education referrals. Reading Improvement, 38(2), 1-19.

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**What, then, are future challenges for CAI and early literacy? One immediate challenge is for computer software designers to include components or branching in their programs to accommodate at-risk children who do not respond readily to treatment, dubbed by Torgesen as "treatment resisters" who surface in every early intervention study.** *Their instructional needs appear to include more intensive practice* **than that given to their at-risk or reading-disabled peers,** *further breakdown of the phonological tasks given in training, and longer duration of training.* **Figuring out ways to build into the software program accommodations for more severe reading-disabled children appears to be the challenge for future successful CAI programs targeting increases in phonological awareness.**
Lyon, G.R. (2001). *Measuring success: Using assessments and accountability to raise student achievement*. Subcommittee on Education Reform Committee on Education and the Workforce U.S. House of Representatives Washington, D.C. Retrieved 11/10/2003 from http://www.nrrf.org/lyon_statement3-01.htm
Wong, B.Y.L. (2001). Commentary: Pointers for literacy instruction from educational technology and research on writing instruction. *The Elementary School Journal, 101*, 359-369.

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**Effective programs make highly effective use of instructional time and provide multiple reading opportunities.**
Schacter J. (1999). Reading programs that work: A review of programs for Pre-Kindergarten to 4th Grade. [On-Line]. Available at: http://www.mff.org/edtech/publication.taf?_function=detail&Content_uid1=279

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

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**The National Literacy Strategy (1998) involves a daily "literacy hour" to attempt to address the problem of reading failure.**
Department for Education and Employment. (1998). *The National Literacy Strategy: Framework for Teaching*. London: Crown.

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**If reading assistance fails to exert a significant impact on the reading performance of low-achieving older readers one reason is that the instruction provided is not sufficiently intense.**
National Institute of Child Health and Human Development (2000*). National Reading Panel: Teaching children to read*. [On-Line]. Available: http://www.nationalreadingpanel.org.

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**We found that extended practice was particularly important toward increasing the magnitude of treatment outcomes.**
Swanson, H.L. (2001). Research on interventions for adolescents with learning disabilities: A meta-analysis of outcomes related to higher-order processing. *The Elementary School Journal, 101*, 331-348.

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**By Year 10, students at the 10th percentile in reading had progressed no further than Year 3 students at the 50th percentile.** Hill, P. (1995). *School effectiveness and improvement: Present realities and future possibilities*. Dean's Lecture: Paper presented at Melbourne University, May 24. Retrieved 1/3/1998 from http://www.edfac.unimelb.edu.au/Seminars/dean_lec/list.htm

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**According to the** *National Research Council* **(1998) report, reading instructional practices should highlight** *ample* **explicit instruction and practice with sound letter correspondences.**
Snow, C.E., Burns, S., & Griffin, P. (Eds.) (1998). *Preventing reading difficulties in young children. Report of the National Research Council*. [On-Line]. Available at:
http://www.nap.edu/readingroom/books/reading/.

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Below are lifted from Jennifer Chew, RRF, Britain http://www.rrf.org.uk/index.htm
**The study for which the OST detailed results are given compared three groups of Scottish Primary 1 (i.e. Reception) children: the first group was taught by `a systematic but gradual analytic method' (one letter-sound per week in the initial position of words). The second group had this same teaching plus separate training in the `analysis and synthesis of sounds in spoken words without reference to print'. The third group (synthetic phonics) was taught at the rate of six letter-sounds in eight days and was taught to read simple words by producing sounds for all letters and blending the sounds. By March of Primary 1, the synthetic phonics group was reading and spelling about seven months ahead of the other groups.**
Watson, J.E., & Johnston, R.S. (1998). Accelerating reading attainment: The effectiveness of synthetic phonics. *Interchange, 57.* Edinburgh: SOEID.

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**The authors investigated `(i) whether overall reading standards can be improved and (ii) the extent to which reading difficulties can be prevented'. While many researchers focus on the Natural development of phonological skills, Solity et al. focus on the role of teaching. In this study, children taught by their Early Reading Research (ERR) approach were taught small units (graphemes and phonemes), blending and segmenting. The results were compared with results in schools using a more eclectic approach. At the end of reception, when both groups had an average chronological age of 5 years 4 months, the ERR children had an average reading age of 5 years 9 months while the comparison group had an average reading age of 5 years 3 months. Of particular interest is the fact that the ERR schools had far fewer problem readers than the comparison schools.**
Solity, J., Deavers, R., Kerfoot, S., Crane, G., and Cannon, K., 1999. 'Raising literacy attainments in the early years: The impact of instructional psychology'. *Educational Psychology, 19*, No. 4, 1999, pp. 373-397.

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**The researchers compared three groups of six-year-olds. One group was following the ERR approach (see above). The second group was following the National Literacy Project Literacy Hour (the forerunner of the NLS Literacy Hour), which put more emphasis on `large units' (particularly onset and rime). The third group received a mixture of small- and large-unit instruction. The ERR group had the best nonword reading skills. [Note: nonword reading ensures that the skill being tested really is decoding rather than sight-word recognition.]**
Deavers, R., Solity, J. and Kerfoot, S, 2000. 'The effect of instruction on early nonword reading'. *Journal of Research in Reading, 23* No. 3, October 2000, pp. 267-286.

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**Landerl followed up an earlier experiment by Wimmer and Goswami. She found that English children taught synthetic phonics were much better at reading non-words than the eclectically-taught children in the original experiment. She notes that the English phonics school, like German schools but unlike many English schools, emphasised blending as well as letter-sound correspondences. She notes, too, that even with good phonics teaching, the complexity of English letter-sound correspondences makes decoding harder for English children than for German children, but suggests that systematic phonics teaching is all the more important in English, as children are less likely to crack the code by themselves.**

Landerl, K. 2000. Influences of orthographic consistency and reading instruction on the development of nonword reading skills. *European Journal of Psychology of Education, XV*, No.3, pp. 239-257.

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**This study is part of the continuing debate about the theory that beginning readers can work out a pronunciation for an unfamiliar printed word by seeing that its spelling, or orthography, is similar to the spelling of a familiar word. The study shows that children are not really seeing orthographic similarities but relying on 'phonological priming' – i.e. it is hearing a 'clue word' pronounced by an adult, rather than seeing it printed, which cause them to produce a similar-sounding word. Nation et al. ran some analogy experiments with children whose average age was 6.0 years. They found that 'an equivalent number of "analogy" responses were made regardless of whether the clue word was seen or just heard'. These findings are yet another challenge to the view that young children make analogies in a way that is useful for reading: *the analogy strategy is not useful as a way of reading unfamiliar words* if it requires that an adult is on hand to pronounce the clue word for the child. Nation et al. conclude that 'the extent to which beginning readers make orthographic analogies is overestimated and as a consequence, theories that emphasise the importance of orthographic analogy as a mechanism for driving the development of early reading skills need to be questioned'.**

Nation, K., Allen, R., & Hulme, C. (2001). The limitations of orthographic analogy in early reading development: Performance on the clue-word task depends on phonological priming and elementary decoding skill, not the use of orthographic analogy. *Journal of Experimental Child Psychology, 80*, 75-94.

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**The researchers worked with French children who had an average age of 5 years 4 months and had received no formal reading instruction. They found that the children attempted to read words by treating some (but not all) of the letters in them as distinguishing features. The children did not, however, pay attention to the order in which letters appeared. The authors conclude that young children do tend to recognise words 'logographically' before they receive formal instruction, but only in the sense outlined here – i.e. their recognition is letter-based. The researchers found no evidence that children recognise words 'globally' or by their general shape.**

Bastien-Toniazzo, M., and Jullien, S., 2001. Nature and importance of the logographic phase in learning to read. *Reading and Writing: An Interdisciplinary Journal, 14,* 119-143.

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**Savage et al. define 'scaffolding errors' as errors 'preserving both initial and final phonemes (e.g 'bark' misread as 'bank')'. These are distinguished from errors which preserve 'either initial or final phonemes (e.g. 'bark' misread as 'bed' or 'like')', 'distant or unrelated errors (e.g. 'bark' misread as 'can' or 'men')' and 'refusals' (children unable to make any attempt at reading a word). The researchers found that when the four types of errors were considered, the proportion of scaffolding errors made at the age of 6 was the best predictor of reading achievement at the age of 8. One finding which the researchers refer to as 'possibly surprising' was that 'errors preserving only initial letters were not good predictors of reading ability'. *The study is consistent with the view that the more attention children are paying to the letters in words at the age of 6, the better they are likely to be reading at 8,* although this conclusion is not explicitly stated in the article.**

Savage, R., Stuart, M., & Hill, V. (2001). The role of scaffolding errors in reading development: Evidence from a longitudinal and a correlational study. *British Journal of Educational Psychology, 71*, 1-13.

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**The researchers administered a standardised reading test (the NFER Primary Reading Test) to a sample of Year 6 children each year from 1989 to 1998. After the national tests started in 1995, the researchers were able to compare the Key Stage 2 test results of the children in their sample with their NFER test results. The Key Stage 2 results suggested rising standards: the percentages of**

children nationally who reached Level 4 or above in 1995, 1996, 1997 and 1998 were 48%, 58%, 63% and 65%; the children in the research sample performed rather better, at 51%, 71%, 71% and 75%. By contrast, the Primary Reading Test results for these children showed no statistically-significant improvement: the average standard scores for the four years in question were 96.78, 98.41, 97.73 and 99.57. The researchers warn that their evidence does not support the government's claims of rising standards. Their findings are in line with the recently-reported findings from the University of Durham.

Davies, J., & Brember, I. (2001). A decade of change? Monitoring reading and mathematical attainment in Year 6 over the first ten years of the Education Reform Act. *Research in Education, 65*, May 2001.

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This study was carried out in Australia. The reading accuracy and comprehension scores (Neale, 1988) from 108 school children aged 6-8 years were compared with their teachers' judgements of their reading ability. It was found that most teachers made *inaccurate* judgements, and, in particular, that among teachers in state schools, '*the extent of over-estimation among students with low achievement scores ... was in excess of 1 year of reading age*' (the picture in private schools was slightly better). The researchers point out that the implications are serious: ' ... it is therefore possible that those needing most help do not receive the intervention necessary to maximise their learning opportunities'. This study is yet another which highlights the need for teachers to rely on objective measurement rather than purely subjective judgement.

Bates, C., & Nettlebeck, T. (2001). Primary school teachers' judgements of reading achievement. *Educational Psychology, 21*(2), 179-189.

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An old but influential study by Clymer (published in 1963) has persuaded many people that the phonic generalizations commonly taught to young children are not very useful. Francine Johnston (University of North Carolina) re-examined the data and reached rather different conclusions, in spite of the fact that she set herself a hard task in focusing only on vowel patterns, which are recognised as more difficult than consonant patterns. She found that the rules could be restated to make them much more reliable. For example, the first vowel has its 'long' sound over 95% of the time with ay, ai and oa. Words with -air and –oar can be considered either separately as 'r-controlled' or, at least in American accents, as needing only minor adjustment in pronunciation if initially sounded out with the first vowel's `long' sound. With some digraphs for vowel sounds, the fact that the first letter does not 'do the talking' is compensated for by the near-100% reliability of the sounds in words (e.g. the -–aw, -oy and -oi in saw, boy and join) or else by the fact that there is usually only a two-way choice (e.g. the ow, ew, and oo in snow/how, blew/view, boot/book). Johnston recommends that children should be encouraged to adopt a 'flexible strategy...such as trying more than one sound and checking the results with their oral language and context'. Some of her solutions work better in American accents than in British, but the general principles she offers would be easily adaptable.

Johnston, F.P. (2001). The utility of phonic generalizations: Let's take another look at Clymer's conclusions. *The Reading Teacher, 55* No 2,

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It is often claimed that whole-language teaching fosters better comprehension in children, even though phonics-taught children may be better at word-recognition. Connelly et al., however, found the reverse: phonics-taught children were better not only at word-recognition but also at comprehension. The researchers compared Scottish phonics-taught children with a group in New Zealand who were matched on word-recognition ability but were taught by the characteristic New Zealand 'book experience' method, which encouraged reliance on context rather than on sounding out and blending. A particularly interesting finding was that 'Phonics taught children produced more contextually appropriate errors, and in both single word and text reading made more attempts at reading unknown words' – *in other words, it seems that children actually make better use of context if they have first extracted all the information they can from the letters in the target word*. 'Compared with the non-phonics group, the phonics group spent more time in attempts at identifying unknown words and this included using contextual information, which apparently resulted in more rehearsal of the meaning and hence better reading comprehension performance'.

Connelly, V., Johnston, R., & Thompson, G.B. (2001). The effect of phonics instruction on the reading comprehension of beginning readers. *Reading and Writing: An Interdisciplinary Journal, 14*, 423-57.

**This article covers much the same ground as the relevant section in the USA's National Reading Panel Report (2000). Studies on phonemic awareness (PA) had to meet stringent criteria in order to be included. An interesting finding related to the socio-economic status (SES) of at-risk readers: 'only 27% were low in SES while 37% were middle to high SES' (the SES of the remainder was not specified). It was found that focusing on just one or two PA skills (e.g. segmenting or segmenting and blending) was more effective than focusing on more PA skills, that `Teaching PA effectively includes teaching the applications as well as the skill', that PA benefited comprehension as well as word-identification, and that 'PA instruction was more effective when it was taught with letters'.**

Ehri, L.C., Nunes, S.R., Willows, D.M., Schuster, B.V., Yaghoub-Zadeh, Z., Shanahan, T. (2001). Phonemic awareness instruction helps children learn to read: Evidence from the National Reading Panel's meta-analysis. *Reading Research Quarterly, 36*, No. 3

**Bonnie Macmillan carried out a meticulous examination of the research evidence behind the influential claims that rhyme awareness promotes reading ability. Much of the article is very technical, but the first three and last three pages are quite accessible even to non-academics. A major point made by Macmillan is that many of the research studies, while claiming to have found a clear causal link between rhyming ability and reading ability, are equally open to the interpretation that the really crucial factor is alphabet knowledge – the researchers have often simply overlooked this possibility. Another important point is that 'The [rime analogy] strategy cannot, in fact, be considered a beginning reading strategy because some letter-sound decoding skill and a considerable sight vocabulary are needed first, in order to use it'. In the closing section of the article, Macmillan gives a very clear and simple account of what is necessary in order to read a cvc word: `letter-shape recognition, the left-to-right, letter-to-sound translation of each letter in turn, and the blending together of the three letter-sounds to pronounce the word'. This study raises some very serious questions about the thinking behind much of the National Literacy Strategy.**

**There is debate over whether children's early rhyme awareness has important implications for beginning reading instruction. The apparent finding that pre-readers are able to perform rhyme tasks much more readily than phoneme tasks has led some to propose that teaching children to read by drawing attention to rime units within words is 'a route into phonemes' (Goswami, 1999a, p. 233). Rhyme and analogy have been adopted as an integral part of the National Literacy Strategy (DfEE, 1998), a move which appears to have been influenced by three major research claims:1) rhyme awareness is related to reading ability, 2) rhyme awareness affects reading achievement, and 3) rhyme awareness leads to the development of phoneme awareness. A critical examination of the experimental research evidence from a methodological viewpoint, however, shows that not one of the three claims is sufficiently supported. Instructional implications are discussed**

Macmillan, B.M. (2002). Rhyme and reading: A critical review of the research methodology. *Journal of Research in Reading, 25*(1), 4-42.

**S. Deno (personal communication, February 7, 1997) suggested that children in first grade must be reading between 30 and 40 words per minute to be able to understand what they are reading at a very basic level**.

Chard, D.J. & Kameenui, E.J. (2000). Struggling first-grade readers: The frequency and progress of their reading. *Journal of Special Education, 34*, 28-39.

**Dowhower noted that students in second grade whose reading rates were higher than 45 words per minute appeared more able to practise reading independently**.

Dowhower, S. L. (1987). Effects of repeated reading on second-grade transitional readers' fluency and comprehension. *Reading Research Quarterly, 22*, 389-406.

**"Freedom is bullshit, discipline is the thing that really teaches you how to grow. It's learning how to be free within very strongly defined limits".** Mike Nock (one of Australia's most creative jazz pianists). The Melbourne Age 30/8/1995

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**"He who has imagination without erudition has wings while he lacks legs".** Joseph Joubert, 1754-1824

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**"Most educators have bought the myth that academic learning does not require discipline - that the best learning is easy and fun. They do not realize that it is fluent performance - that is fun. The process of learning, of changing performance, is most often stressful and painful".** Lindsley, O. (1992). Why aren't effective teaching tools widely adopted? Journal of Applied Behaviour Analysis, 25, 21-26.