

Newsletter

Teaching Reading IS Rocket Science

From *Everybody Reads*

Helping to make sure that all children are good readers

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Can Reading Make You Smarter?

Can simply reading a lot create smarter kids or do smart kids just read more?

More specifically, over against other sources of knowledge and smartness, what does the sheer volume of reading contribute? Can the sheer volume of reading make you smarter than what would normally be expected? How do we know that increased smartness was specifically related to the amount of reading done and not to other sources of knowledge?

In a recent report entitled, "What Reading Does For the Mind," Anne E. Cunningham, of the University of California, and Keith E. Stanovich, of the University of Toronto, have summarized work that they have done on these questions, along with other related studies. This report was supported by the Spencer Foundation and the Social Sciences and Humanities Research Council of Canada and was published in the 1998 spring/summer issue of the American Educator special issue on reading, entitled, "The Unique Power of Reading and How to Unleash It."*

This report begins as follows. "Reading has cognitive consequences that extend beyond its immediate task of lifting meaning from a particular passage. Furthermore, these consequences are reciprocal and exponential in nature. Accumulated over time - spiraling either upward or downward- they carry profound implications for the development of a wide range of cognitive capabilities."

What the volume of reading does for the cognitive development of a child has serious implications. In fact, discussions on this topic often use the biblical imagery of the "Matthew effects" that refers to the "rich-get-richer and the poor-get-poorer." In reading, the sheer volume of reading done by the better reader has the potential of providing an upwardly spiraling advantage, and less exposure to text by poorer readers, mostly caused by unrewarding early reading experiences, leads to a downward spiral in learning and cognitive development. This downward spiraling is difficult, if not impossible, to completely reverse. "Lack of exposure and practice on the part of the less-skilled reader delays the development of automaticity and speed at the word recognition level." Slow word reading drains attention and effort from comprehension.

As a result of less reading, "reading for meaning is hindered; unrewarding reading experiences multiply; and practice is avoided or merely tolerated without real cognitive involvement." Thus, many differences in cognitive abilities seen in children who read at different levels can be directly attributed to differences in the amount of reading practiced. It is further contented by these researchers, that this difference is mainly due to the speed in which beginning reading skills are acquired. Delays in learning to read also delays the accumulation of reading volume.

*copies of this issue may be obtained by contacting the American Educator, AFT, 155 New Jersey Avenue, NW, Washington, DC 20001-2079. Ph. 202-879-4420

This places the child behind his or her peers in developing cognitive skills such as vocabulary, background knowledge, and familiarity with complex syntactic structures. Children who begin reading early have a distinct advantage in accumulating reading volume over those who start late, and thus, are more likely to acquire these skills at a higher level.

What are the facts that support this contention?

A major difficulty in establishing evidence of this kind is the fact that increases in reading volume are accompanied with other kinds of characteristics. Finding the unique contribution of reading volume is complicated because avid readers and non-readers are different in many ways.

Vocabulary growth is one area that has been studied. High levels of vocabulary are expected to be found with reading volume for several reasons. Studies cited indicate that vocabulary growth is acquired indirectly from language exposure more than direct instruction. Furthermore, printed text contributes to vocabulary more than oral language.

One way to demonstrate this is to analyze word frequency and rare words used in typical sources of print and oral language. Such an analysis has revealed that even children’s books and comic books rank higher as sources for vocabulary learning than popular prime-time adult TV shows, adult expert witness testimony and even the conversations of college graduates. Popular magazines and newspapers were found to have 3 times the amount of rare words than TV adult prime-time shows. So reading has the potential of developing greater vocabulary growth than oral language exposure or participation.

This Newsletter is dedicated to providing up-to-date information about research findings or research-based publications and events on teaching reading.

The authors conclude: “The large differences in lexical richness between speech and print are a major source of individual differences in vocabulary development.”

Thus, an avid reader is more apt to accumulate more vocabulary over time. Estimates of out-of-school time spent reading can show how this works. A 1988 study showed that the amount of time that the average child in a particular fifth grade class spent reading out-of-school was 4.6 minutes a day, or about a half an hour a week. This is about six times as much as the child at the 20th percentile, who, on the average, read about twenty times less than the child at the 80th percentile. When figuring what this means in terms of the amount of words read a year, it was estimated that the amount of words read a year by a child at the 10th percentile is equivalent to just two days of reading by a child at the 90th percentile. From this data it is fairly easy to see how differences in reading habits result in large vocabulary differences among children.

In studying reading volume over against more general abilities such as IQ, it was found “that even when performance is statistically equated for reading comprehension and general ability, reading volume is still a very powerful predictor of vocabulary and knowledge differences. ...and is not simply an indirect indicator of ability; it is actually a potential separable, independent source of cognitive differences.”

These researchers found that reading volume accounts for differences in several measures of smartness: growth in reading comprehension from grade three to grade five, HS grade average, IQ tests, SAT-type math tests, adult reading tests, a Practical Knowledge test, and even misconceptions about the population of world religions. It was not surprising to find that TV exposure was inversely related to the last measure. It was even found that reading volume can help to compensate for the normally deleterious effects of aging.

What predicts reading volume? Or, how important is first grade?

All of this emphasizes the benefits derived from reading volume. This may not be particularly surprising. Yet, given these consequences for simply reading a lot, the more serious question emerges about the causes for high reading volume. What enables a child to accumulate a high volume of reading?

The authors conclude from other studies cited, that the major causes for not acquiring reading volume are a combination of deficient decoding skills, lack of practice, and difficult materials in the early grades. The child that is able to learn how to read words accurately and easily in a given text early, will have a head-start in accumulating reading volume. This head start, with its cognitive benefits, is hard to make up later.

Children who accumulate high levels of reading volume do so mostly because they learn to read early. This volume of reading, in and by itself, has a powerful affect on future learning and the shaping of the mind. In a unique ten-year longitudinal study, the authors found that all three standardized measures of first grade reading ability (decoding, word recognition, and comprehension) predicted eleventh-grade reading volume even after reading comprehension ability had been partialled out. They were even stronger predictors of reading volume than IQ measures.

The authors conclude, “This is a stunning finding because it means that students who get off to a fast start in reading are more likely to read more over the years, and, furthermore, this very act of reading can help children compensate for modest levels of cognitive ability by building their vocabulary and general knowledge. In other words, ability is not the only variable that counts in the development of intellectual functioning. Those who read a lot will enhance their verbal intelligence; that is, reading will make them smarter.”

“A positive dimension of our research is that all of our studies have demonstrated that reading yields significant dividends for everyone - not just for the ‘smart kids’ or the more able readers. Even the child with limited reading and comprehension skills will build vocabulary and cognitive structures

through reading.”

An Action Plan by the Learning First Alliance

(continued from November issue)

The twelve largest educational

organizations in the country met in January 1998 and adopted an “action paper” entitled, Every Child Reading: An Attainable Goal.

In this paper, it is claimed that “With what we now know, this country’s reading problems are largely solvable if we have the will to solve them.”

Excerpts from this paper concerning research on teaching reading are as follows.

Every Child Reading: A Research Base

In forging a strategy to ensure reading success for all, it is essential to focus on practices grounded in research.

After years of conflict between “whole language” and “phonics” advocates, a consensus about what works is emerging.

The Learning First Alliance sees its challenge as having to react quickly to new research information without falling victim to unsubstantiated fads. To meet this challenge, this paper relies heavily on quantitative research to inform key decisions that policy makers and educators must make to improve student’s reading skills. These types of research, if replicated many times in many circumstances, can tell educators that, on average, one approach is likely to be more effective than another.

During pre-K and kindergarten, students should develop:

Language skills, Background knowledge, Appreciation of stories and books, Concepts of print, Phonemic Awareness, and Alphabet and letter sounds.

One of the most important foundations of reading is phonemic awareness. Phonemes are the basic speech sounds that are represented by the letters of the alphabet, and phonemic awareness is

Book Review:

Foundations of Reading Acquisition and Dyslexia: Implications for early intervention. 1997, Benita Blachman (ed.) Lawrence Erlbaum Associates.

It there is such a thing as a research community, the 21 authors of the chapters of this book represent key members of this community. The 18 chapters of this volume are based on presentations that the authors made at an international conference in Hawaii. The conference was sponsored by the National Dyslexia Research Foundation. Most of the contributors have conducted studies sponsored by the National Institute of Child Health and Development (NICHD), yet international researchers are also represented from England, Australia, Canada and New Zealand. For those who would like to be brought up to date on the state-of-the-art in research on teaching reading, this one volume is a good place to begin. These researchers have contributed to our scientific understanding of the reading process, especially as it concerns the critical role played by phonological abilities of children. As the editor states, “The chapters in this book represent the progress that is being made in basic and applied research with respect to our understanding of how children learn to read and why many children fail.”

The book is divided into four sections: Theoretical Foundations, Subtypes of Dyslexia, Beginning to Read and Spell, and Implications for Intervention. Alvin Liberman, the co-founder of the Haskins Laboratories in New Haven, Conn. sets the stage in the first chapter, “How Theories of Speech Affect Research in Reading and Writing.”

Liberman first describes the relevance of a theory of speech for understanding how children learn to read, and then discusses the implications of the biology of speech for understanding what makes reading and writing hard to acquire. He describes the biological mechanisms that enable us to speak and how these mechanisms evolved with language to serve only a phonetic purpose and none other. But because the bits and pieces of sounds produced are buried in words, it makes it very difficult for them to be uncovered. Speaking and listening do not required any awareness of the phonetic components of words. Yet, in order to understand how print represents speech, these components need to be clearly identified. Because of the alphabetic nature of written language, knowledge of and facility with the internal phonetic structure of words is necessary for good reading. Herein lies a lot of the problems with learning to read. As Liberman states, “Special difficulty in reading might well be caused by a weakness of the phonological module, for that would produce primary representations of a fragile sort, with the consequence that they would be that much harder to bring to awareness.”

Susan Brady, also of the Haskins Lab, follows this up with a discussion on the impact that deficits on phonological processing (i.e., knowing and producing the phonetic components of words) can have on learning to read in her chapter entitled, "Ability to Encode Phonological Representations: An Underlying Difficulty of Poor Readers." She explores the possibility that differences in the ability to translate print to speech are responsible for many of the language weaknesses of poor readers.

These themes are continued in two chapters on subtypes of dyslexia. Jack Fletcher's team from the University of Texas, found that a common factor among four of the five identified "specific" reading-disabled subtypes was a deficit in phonological awareness. Keith Stanovich's team from Toronto, Canada, found that the most robust subtype was phonological dyslexia.

Linnea Ehri, from the City University of New York, provides a thorough theoretical account of the phases of development (i.e., prealphabetic, partial alphabetic, full alphabetic, and consolidated alphabetic) that children go through as they develop fluent word recognition. She presents evidence to show that "children with reading disabilities have less complete representations of words in memory and spend more time at the partial alphabetic stage than normal readers."

Barbara Foorman, of the University of Houston, and her team of researchers provide evidence to show that children who are behind in learning to read in the early grades will not "catch-up" on their own. They also provide evidence that such delays can be prevented with early interventions, as early as kindergarten.

demonstrated by the ability to identify and manipulate the sounds within spoken words. (children) can learn to assemble phonemes into words as well as break words into their phonemes even before they are writing letters or words.

Beginning Reading Programs

When it comes to reading, the nine-months of first grade are arguably the most important in a student's schooling.

It is during first grade that most children define themselves as good or poor readers. Unfortunately, it is also in first grade where common instructional practices are arguably most inconsistent with the research findings. This gap is reflected in the basal programs most commonly used in first-grade classrooms. The National Academy of Sciences report found that the more neglected instructional components of basal series "are among those whose importance is most strongly supported by the research.

To integrate research-based instruction practices into their daily work, teachers need:

Training in alphabetic basics and A proper balance between phonics and meaning in their instruction.

However, classroom practices of teachers, schools, and districts using "balanced approaches" vary widely.

Some teachers teach a little phonics on the side, perhaps using special materials for this purpose, while they primarily use basal reading programs that do not follow a strong sequence of phonics instruction. Others teach phonics "in context," which means stopping from time to time during reading or writing instruction to point out, for example, a short "a" or an application of the silent "e" rule. These instructional strategies work with some children but are not consistent with evidence about how to help children learn to read most effectively, especially those who are at risk.

The bottom line is that all children have to learn to sound out words rather than relying on context and pictures as their primary strategies to determine meaning. Research shows that all proficient readers rely on deep and ready knowledge of spelling-sound correspondence while reading, whether this knowledge was specifically taught or simply inferred by students. Conversely, failure to learn to use spelling/sound correspondences to read and spell words is shown to be the most frequent and debilitating cause of reading difficulty.

Well-sequenced phonics instruction early in first grade has been shown to reduce the incidence of reading difficulty even as it accelerates the growth of the class as a whole. Given this, it is probably best to start all children with explicit phonics instruction.

Strong reading materials:

Early in first grade, a child's reading materials should feature a high proportion of new words that use the letter-sound relationships they have been taught. It makes no sense to teach decoding strategies and then have children read materials in which these strategies won't work. (It is recommended) that children practice reading independently with texts slightly below their frustration level and receive assistance with slightly more difficult texts.

The complete text of this "action paper can be found on this link. learningfirst.org/publications.html

Another link to research findings: sedl.org/rci/framework/research.html#background