**McGuinness, Diane (2004). *Early Reading Instruction: What Science Really Tells Us about How to Teach Reading.* Cambridge, MA: MIT Press.**

Pp. xiii + 410
$35.00 (hardback)  ISBN 0-262-13438-1

## Reviewed by Gale A. Mentzer

**November 15, 2004**

No one can question the plethora of research on reading instruction published over the past 40 years. And yet, in spite of research findings, English-speaking children's reading achievement continues to fall below state and national standards. To discover why English reading instruction is not accomplishing its goals, McGuinness takes us on an analytical journey that begins with a thorough examination of the development and structure of the English language and alphabet/writing system and continues through an exhaustive examination of reading instruction research focusing specifically on those studies that have met rigorous scientific standards.

The main underlying impediment to reading achievement in English-speaking/reading children is attributed to the fact that English is an opaque writing system. In contrast, many European countries with high literacy rates have transparent alphabet codes—where each letter corresponds with one specific sound (phoneme). In an opaque system like English, not only do some letters correspond to more than one sound (c = k and c = s), but there are also multiple spellings of the same sound (wait, weight).

Because McGuinness believes spelling and reading are intricately related, she begins by examining the nature of writing codes or systems to provide readers with an understanding of why writing systems were created. Her examination includes several types of writing systems including those that failed to work, like whole-word symbols (each word has its own symbol) due to limitations of the human memory, and the invention of the alphabet system to address this limitation. All alphabet systems are based upon the sound unit or phoneme. While the use of symbols to represent speech is a natural progression, McGuinness

stresses that it is a system that must be learned as opposed to an innate ability and she notes that children must be made aware of phonemes and be trained to use the alphabet as a coding/decoding system of language. In addition, spelling (encoding) and reading (decoding) are reversible and as such should be taught simultaneously.

And this is precisely from where the difficulty with reading English is derived. English-speaking countries often teach reading and spelling as two separate subjects. In addition, the English spelling code is the blend of five different languages. So while English has spelling rules, there are a multitude of exceptions which make both encoding and decoding especially difficult. While there are 26 letters in the English alphabet, there are actually 40fundamental phonemes. When children are taught letters rather than phonemes, they struggle to understand from where the extra sounds come. Readers must learn and memorize not only the spelling rules, but also the exceptions. McGuinness supports this theory by reviewing several studies that addressed the English spelling code and its idiosyncrasies. She notes that children who learn to read in transparent languages have little if any reliance upon the memorization of special rules when encoding and decoding. Finally, McGuinness cites a study (Smith, 1999) in which a spelling program was provided to adolescents whose reading levels were as much as five years below their chronological age. Not only did the children's spelling improve, but their reading comprehension gained significantly. She concludes that "children score higher on reading tests when they are taught to spell than when they are taught to read" (p. 70).

After having set the stage for the underlying causes of reading difficulties, McGuinness then reviews reading research in the 20$^{th}$ century. Early studies had little if any scientific foundation and prior to the 1960's few studies used more than an "eye-ball" of mean scores to make comparisons. Studies in the 1960's, while more robust in design, still had major validity flaws. For example, the pioneer study by the Cooperative Research Program (Bond & Dykstra, 1967) lost variance by using group means rather than individual scores. In addition, variance caused by demographics, schools, and teachers was not taken into account. Findings did suggest that the Lippencott program, a phonic/linguistic method of teaching reading (where students write letters/symbols as they learn to decode them), showed the most gains. However, these findings were not followed up with further research—an oversight that McGuinness feels has put reading instruction 20 years behind where it might be today.

Her examination of modern reading instruction research extends over the past 30 years. The majority of these studies (90%) was descriptive or examined relationships to determine the qualities or skills good readers possessed rather than how these skills might be developed and taught. McGuinness focuses upon the 10% that actually did examine the effectiveness of reading instruction programs themselves. Her review is based upon findings of the National Reading Panel's (NRP) survey (2000) on reading instructional methods. NRP findings were based upon a meta-analysis of research that met specific, scientifically-based criteria. As

such, the number of studies scrutinized was dismally low (e.g., only 38 of 1,072 studies on reading instruction passed the final screening). Her examination of the research is divided into sections based upon NRP research topics—reading instruction, phoneme awareness training, reading fluency, vocabulary and comprehension, and spelling.

Within the area of reading instruction, most studies compared a phonics-type program with some other type of reading instruction. To her credit, McGuinness checked and/or recalculated effect sizes and divided studies within this area into the subcategories of beginning readers and older readers in order to get a more precise interpretation of research results. What follows is a somewhat technical explanation of methods of calculation and reasons for including or excluding some studies from the NRP analysis in her review. Several studies included in the NRP report are examined in great detail as McGuinness takes us through her analysis step by step. In short, McGuinness was careful to follow the rigorous scientific methods she finds lacking in reading research. While NRP found support for a phonics-based instruction system and found no difference between types of phonics programs, McGuinness questions these findings citing errors in effect size calculations, inclusion of studies that did not address the stated topic, and a lack of a clear method of classifying phonic instructional programs. Using McGuinness' methodology, there was a clear difference in the level of success dependent upon the type of phonics instruction. In particular, she found that linguistics-phonics programs—programs that teach the 40 phonemes and their main spellings along with spelling alternatives—produced significantly higher effect sizes than other types of phonics programs.

Next McGuinness turns her analytical eye to the necessity of special phoneme-awareness training. In this case, she is examining programs that focus solely on the recognition of phonemes rather than an integrated program that includes other aspects of reading instruction. Again, using the NRP survey and continuing her thorough review of study quality and recalculation of results, she finds many weak studies included in the NRP survey. She cites one study in which results were interpreted to match the hypothesis (p. 165). The litmus test McGuinness used to determine effective phoneme-awareness training was a comparison to results of the Jolly Phonics program developed by English educator Sue Lloyd (1992). In Jolly Phonics, 4 year olds are taught the 40 phonemes and their basic spellings in a period of about 11 weeks. At the end of the year, these children were one year ahead of the control group on standardized reading and spelling tests. Her analysis concludes that phoneme-awareness training is most successful when it is linked to sound-symbol associations (letter identification) and suggests that stand-alone phoneme-awareness training will not provide better instruction than the linguistic-phonics programs where phoneme identification and sequencing are included. Citing the conclusions of the NRP, she again emphasizes the link between learning to read and learning to spell with a special emphasis on spelling correctly.

Another approach to re-analysis of the NRP study on phonics can be found in the

work of Camilli, Vargas, & Yurecko (2003). Their findings support errors in NRP effect size calculations as well as the lack of a solid base of scientifically sound studies to be included that McGuinness notes. They also recommended that phonics instruction alone is not as effective as phonics instruction that is linked to other types of reading instruction including other language activities and tutoring. They did not, however, discern a strong partnership between phonics instruction and sound-symbol associations specifically.

Reading fluency has been seldom measured in English-speaking countries. And yet, there are beliefs that a slow reading speed may inhibit one's ability to comprehend. Within the NRP study, there were two approaches to training in fluency—rereading and motivating students to read more often. Both appear to be forms of practicing a basic skill. McGuinness found, when examining the rereading research studies included in the NRP survey, that rereading can improve speed, accuracy, and comprehension. This improvement will transfer to new passages when the vocabulary is similar. Based upon the findings of one fairly comprehensive study (Dowhower, 1987), McGuinness adds that setting achievement goals like 100 words per minute, allows students a tangible target. In the Dowhower study, students met their target goals. McGuinness suggests that these targets become moving so that as a child develops in fluency, a new level of achievement is set. In all cases, text difficulty level should match reading ability and should advance as fluency levels advance.

While decoding and fluency are the beginning of reading, vocabulary and reading comprehension are major factors. Vocabulary building begins around 18 months as children hear family and friends speak (as well as the television and radio). Words children remember are words that are important to them—words that allow them to communicate what they want to communicate. Children come to school with varying and often disparate vocabularies based upon language use at home. The more words a child heard during the first few years of life, the larger that child's vocabulary at entry to formal school. Once again examining studies included in the NRP survey, McGuinness provides us with a summary of what works in vocabulary instruction including methods that link meaning with student cognitive engagement and linking frequency of exposure with teacher guidance or instruction. What was not found to be effective was using context analysis to derive meaning (whole language approach) nor was learning vocabulary in isolation of some content. Vocabulary has been found to increase when children participate in comprehension programs.

McGuinness found major weaknesses in the NRP analysis of reading comprehension programs. Rather than conduct a meta-analysis, NRP sorted studies into categories and made some general observations. She also observed that many studies NRP included in their observation were methodologically inferior which biased the results. Her in-depth examination of the studies revealed only one study that showed promise in the development of comprehension skills beyond the focus of study (Block 1993). In this study, eight strategies or skills

were identified as essential to developing or improving reading comprehension. They included basic cognitive operations, analytic thinking, decision-making strategies, problem solving strategies, skills for meta-cognitive analysis, creative thinking skills, the ability to work in groups, and the ability to work along. From these eight strategies, Block created 16 lessons—2 per strategy. In the first lesson a critical thinking technique along with strategies to improve comprehension were introduced; in the second lesson what was learned was applied to new reading. The results of this study far exceeded any other study under review. Sadly, McGuinness notes, these results have not found recognition in the reading instruction and research community.

Finally, McGuinness turns to spelling instruction. Research on classroom spelling programs is virtually non-existent and was not covered by the NRP report. McGuinness begins her examination by discussing spelling development theory. A common belief is that spelling ability develops in set stages and therefore should be taught in accordance with these stages. Her examination of studies concluding that these stages exist revealed weak designs, ignored or misinterpreted results, and unfounded conclusions. One study that challenged the stage theory (Varnhagen, McCallum & Burstown, 1997) used the proposed classification stages to measure spelling errors in children in grades 1 through 6. The types of spelling errors were then plotted by age of the child and, if the stage theory were correct, types of spelling errors would be linked to the age of the child. However, the resulting plots revealed no evidence of developmental stages suggesting that spelling instruction should not follow the stage theory.

So, what does work? Based on studies conducted in the last 10 years, McGuinness provides the following suggestion: Practice—writing words correctly improves student spelling (A pretty good speller, I still have agonizing primary school memories of writing each new spelling word 10 times!). Other studies indicated that learning letter names as opposed to learning phoneme-grapheme correspondences (learning the sound that goes with the letter) could negatively affect spelling proficiency. While there is some research on spelling ability and indirect evidence that spelling and reading abilities are related, McGuinness laments that there has been no research as to how poor spellers and readers came to be as such. Her suggestion is that there might be a relationship between instructional practices and spelling ability.

English is an opaque language and, as such, reading instruction should address its difficulties and nuances. McGuinness' assessment of reading instruction research over the past 30 years indicates that poor reading ability is directly linked with inadequate reading instruction. Research also points towards phonics programs as being the best way to teach reading. However, studies to date have not compared different phonics programs with each other. McGuinness' own evaluation of phonics programs included in the NRP study shows that linguistic phonics (teaching sound to letter) is superior. In this method, the teacher first introduces a phoneme. Once the children have mastered the phoneme, they are introduced to

the letter or letters that most commonly represent it. Within linguistic phonics McGuinness recommends that sight words and letter names be excluded from the instruction as they have been shown to have no or negative correlations with reading and spelling scores.

Additionally, McGuinness warns about stretching instruction out over a long period of time. Research has shown that 4 and 5 year olds can master the 40 phonemes, their basic spellings, and how to write the letters representing them in 10 to 16 weeks (as evidenced by the Jolly Phonics program). On the other hand, when teaching comprehension and vocabulary, long-term instruction is the key. This type of training must permeate all content areas of instruction and continue over the course of several years.

The task of reviewing reading instruction research is daunting and McGuinness' efforts are admirable. Her exhaustive, thorough examination often left this reader fatigued and yet her comprehensive analysis has left few if any stones unturned. Her disappointment with the lack of quality research studies is well-justified and it is hoped that her diatribe on this inadequacy will stir researchers in reading to construct scientifically-based studies from which findings and conclusions will provide a solid foundation upon which we can systematically improve reading instruction and ultimately the reading ability of our children.

## References


Block, C.C. (1993). Strategy instruction in a literature-based reading program. *Elementary School Journal*, 94, 139-151.

Bond, G.L., and Dykstra, R. (1967). The cooperative research program in first-grade reading instruction. *Reading Research Quarterly*, 2, 1 -142.

Camilli, G., Vargas, S., and Yurecko, M. (May 8, 2003). *Teaching Children to Read*: The fragile link between science and federal education policy. *Education Policy Analysis Archives, 11*(15). Retrieved 10/15/04 from http://epaa.asu.edu/epaa/v11n15/.

Dowhower, S. L. (1987). Effects of repeated reading on second-grade transitional readers' fluency and comprehension. *Reading Research Quarterly*, 22, 389-406.

Lloyd, S. (1992). *The Phonics Handbook*. Essex, England: Jolly Learning Ltd.

National Reading Panel (2000). *Report*. Washington, DC: National Institute of Child Health and Human Development.

Smith, A.A. (1999). The simple logic of sound-to-letter mapping: A reversible

cod. Unpublished master's thesis, Massey University, Albany, New Zealand.

Varnhagen, C.K., McCallum, M., and Burstown, M. (1997). Is children's spelling naturally stage-like? *Reading and Writing: An Interdisciplinary Journal*, 9, 451-481.

## About the Reviewer

**Gale A. Mentzer**, Ph.D., is a professional program evaluator who has worked with a variety of educational institutions and community service organizations in Northwest Ohio. Her research interests are varied and include the study of quality distance learning instruction, the effective use of technology as an instructional tool and educational enhancement programs that partner with community services. Most recently, she has conducted an analysis of the Reading Recovery program in Ohio for the Ohio Department of Education in which student characteristics and environmental factors that may enhance student success rates were examined.