

**Effective Beginning Reading Instruction:
A Paper Commissioned by the National Reading Conference**

by

Michael Pressley
University of Notre Dame

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Pressley, M. (2001). Effective Beginning Reading Instruction. Executive Summary and Paper Commissioned by the National Reading Conference. Chicago, IL: National Reading Conference.

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Executive Summary

Recently, the National Reading Panel offered a summary of the research literature about beginning reading instruction. They concluded that beginning reading competence is fostered by instruction in phonemic awareness, phonics, vocabulary, and comprehension strategies. The Panel also favored guided oral reading, teacher professional development related to beginning reading, and use of computer technology in the development of early reading skills. An important problem, however, was that much of the scientific evidence relating to beginning reading instruction was ignored in the development of the report. The Panel decided early in its process to focus on only a very few topics and limit its review to experimental and quasi-experimental evidence. Even so, the conclusions of the Panel certainly were credible, as far as they went, covering well the teaching of some beginning reading skills---notably, letter, sound, and word-level skills.

- Phonemic awareness instruction is effective in promoting early reading (e.g., word reading, comprehension) and spelling skills.
- Systematic phonics instruction improves reading and spelling and, to a lesser extent, comprehension.
- Guided oral reading (i.e., a teacher listening as a student reads, providing instruction as needed) and repeated reading of texts increase reading fluency during the elementary years.
- A variety of methods of vocabulary instruction make sense, with vocabulary instruction positively impacting reading comprehension.
- Comprehension strategies instruction improves comprehension, with a number of strategies positively affecting understanding of text. and summarization. Teaching students to use a small repertoire of effective strategies (e.g., predicting upcoming text content, seeking clarification when confused, asking questions, constructing mental images representing text content, and summarizing) was given an especially strong endorsement by the Panel.

The Panel ignored scientifically-validated findings pertaining to instruction at home (e.g., storybook reading), television effects (e.g., Sesame Street, captioning), community resources (e.g., tutoring), whole language, language of instruction, and school reform movements.

- Professional development can change teachers' instruction in reading, with impact on student achievement, although much more research is needed to identify helpful approaches to in-service education.
- Greater community resources that can promote young children's literacy, such as volunteers who tutor children in reading, and in doing so, improve early reading.

- When books are made available to young children---for example, through community efforts such as Reading is Fundamental---children are more likely to engage in literacy-promoting activities, with the result enhanced language and literacy skills.
- Whole language interventions at school do seem to promote some general, beginning understandings about reading and writing.
- Literature-driven instruction increases children's autonomous reading.
- Instruction featuring strong connections between literature and concept learning increases academic curiosity and engagement as well as use of comprehension strategies.
- Experiences with literature also increase understanding of the structure of stories.
- Children's comprehension of the ideas in text increase when they have conversations about literature with peers and teachers.
- Some essential literacy skills that effect reading, such as how to search texts for critical information and writing, also were ignored entirely by the Panel.
- Exposure to a second language can have positive implications for literacy development in the first language, for example, increasing vocabulary knowledge.
- There was neglect of research on the characteristics of schools and classrooms where beginning literacy achievement is high, especially for students at risk for development of literacy skills.

In summary, the National Reading Panel was too narrow in its focus, failing to report a great deal of credible science that can and should inform policy debates about beginning literacy instruction. There is good scientific data consistent with the conclusion that the interventions favored by the Panel are not enough: Effective reading instruction occurs over years and changes with the developmental level of the child, with these dynamics not captured at all by the Panel's emphases on discrete skills appropriate at only particular developmental levels (i.e., mostly when children are mastering letter-sound associations and beginning word recognition). Effective literacy instruction is a balance and blending of skills teaching and holistic literature and writing experiences.

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In 1997, the Congress charged the director of the National Institute of Child Health and Human Development, who was to consult with the Secretary of Education, to appoint a national panel to assess research-based knowledge about teaching children to read. The National Reading Panel was established in response to this mandate, with it presenting conclusions to the Congress and the public in early 2000. (Henceforth, NRP will be used to refer to the publication, and “Panel” will be used to reference the group of scholars who produced the report.)

The NRP followed closely on the heels of another national report, Preventing Reading Difficulties in Young Children (PRD; Snow, Burns, & Griffin, 1998), commissioned by the National Research Council. The group who assembled the conclusions summarized by Snow et al. (1998) were distinguished researchers in literacy and language research. The conclusions in PRD were reached by consensus (i.e., the members of the panel made recommendations based on their experiences, knowledge of the relevant literatures, and wisdom). This permitted commentary on a broad range of issues in reading education, although there was a great deal of emphasis on natural development of literacy competencies (i.e., in contrast to development through instruction in school) and, as the title implied, a focus on children who were at risk for difficulties in learning to read. These overarching foci reflected, in part, the backgrounds

of the authoring panel, with many coming from the fields of developmental psychology and exceptionality. Even so, PRD included much about reading instruction often encountered in schools serving normally-achieving youngsters, although there was much more emphasis in the report on letter-, sound-, and word-level reading instruction than development of higher-order literacy competencies, such as comprehension of complex text, making inferences based on information in text, and searching text for particular types of information. Unfortunately, the selective referencing in the volume also prominently favored the work of members of the report's authoring team or their close colleagues. With seven of the 17 members of PRD's contributors being scholars who study lower-order reading skills (i.e., letter-, sound-, and word-level reading), it was inevitable that this consensus document would address such competencies more completely than higher-order components of reading. In short, although PRD was a wide-ranging document, it represented very much the opinions of the experts writing it, which raised the suspicion that other equally qualified experts might have come up with a different set of conclusions.

From the outset, the Panel charged to develop NRP decided to operate differently than the authors of PRD, intentionally limiting its scope, with the publicly-admitted motivation for doing so being the overwhelming volume of evidence pertaining to early reading instruction. The Panel decided to review only the following topics of instruction: alphabets (i.e., phonemic awareness instruction, phonics instruction), fluency, comprehension (i.e., vocabulary instruction, text comprehension instruction, teacher preparation and comprehension strategies instruction), teacher education and reading instruction, and computer technology and reading instruction. They also limited their

focus to true experiments (i.e., studies involving random assignment of participants to instructional conditions, with the instructional conditions then compared using formal statistical procedures) and quasi-experiments (i.e., studies involving comparisons between instructional conditions, although participants were not assigned to the conditions randomly), presumably in response to the Congressional demand that the Panel adopt rigorous research methodological standards. The Panel also opted to use a statistical procedure known as meta-analysis to summarize findings. In order to generate conclusions using meta-analysis, a number of experimental and/or quasi-experimental comparisons on a topic must be available. The technique generates an average effect size (i.e., a numerical average of observed effect sizes). In short, the Panel substantially circumscribed its mandate, focusing only on particular topics studied many times over in experiments and/or quasi-experiments. In this article I review and respond to the NRP, and, in doing so, propose that there are many literacy instructional practices that enjoy scientific support that the Panel ignored, ones that should be considered by all who desire to create or inspire scientifically defensible literacy education.

Findings of the Panel

The Panel offered some very strong conclusions based on its review of the literature, with the most visible ones being the following:

- Phonemic awareness instruction is effective in promoting early reading (e.g., word reading, comprehension) and spelling skills. The Panel concluded that phonemic awareness instruction is effective in first grade and kindergarten as well as with reading disabled students in the later elementary grades.

- Systematic phonics instruction improves reading and spelling and, to a lesser extent, comprehension. Just as Chall (1967) concluded that synthetic phonics (i.e., instruction teaching students explicitly to convert letters into sounds and blend the sounds) is more effective than other forms of systematic phonics instruction, the Panel reported an advantage for synthetic phonics instruction over other phonics approaches.
- Guided oral reading (i.e., a teacher listening as a student reads, providing instruction as needed) and repeated reading of texts increase reading fluency during the elementary years.
- A variety of methods of vocabulary instruction make sense, with vocabulary instruction positively impacting reading comprehension.
- Comprehension strategies instruction improves comprehension, with a number of strategies positively affecting understanding of text, including teaching students to be aware of whether they are comprehending and to deal with miscomprehension when it occurs (e.g., by re-reading); using graphic and semantic organizers to represent text; teaching students to attend to story structure (who, what, where, when, and why information) as they read; question generation and question-answering during reading; and summarization. Teaching students to use a small repertoire of effective strategies (e.g., predicting upcoming text content, seeking clarification when confused, asking questions, constructing mental images representing text content, and summarizing) was given an especially strong endorsement by the Panel. Both direct explanation (Duffy et al., 1987) approaches---starting with teacher modeling and explanation of strategies

followed by scaffolding teacher practice of the strategies---and transactional strategies instruction (i.e., direct explanation with an emphasis on teacher-student and student-student discussions and interpretations of text during practice of strategies; Brown, Pressley, Van Meter, & Schuder, 1996; Pressley et al., 1992) were supported by the Panel.

- Professional development can change teachers' instruction in reading, with impact on student achievement, although much more research is needed to identify helpful approaches to in-service education.
- Computer technology has great potential for improving beginning reading achievement, with promising approaches for promoting word recognition, vocabulary development, and comprehension enjoying support in the small extant research literature evaluating computer effects on literacy development.

In summary, the Panel found much support for skills-based instruction--- instructional development of phonemic awareness, phonics competencies, knowledge of vocabulary, and comprehension strategies. The conclusions about teacher development and computer-based reading instruction were less complete and emphatic because there was so little credible research on those issues, at least given the Panel's stringent criteria. The message emerging from the Panel report was that there is massive, scientific evidence in favor of teaching reading skills. From this it follows that there is much less support for anything besides teaching of isolated skills. Thus, even with respect to the higher-order competency of comprehension, the Panel emphasized the teaching of individual strategies more than the teaching of the entire complicated processing that

sophisticated readers employ when they read challenging texts (Pressley & Afflerbach, 1995).

Credibility of the Panel Findings

My first reaction to the findings reported in NRP was that they were very credible, as far as they went. In my own book-length analysis of the scientific literature about effective elementary literacy instruction (Pressley, 1998, revision in press), I included most of the major conclusions in the NRP. For my entire professional career, I have been steeped in the understanding that when an experimental finding is replicated many times over, believe it. Believe that instructional components producing achievement differences in experiments and quasi-experiments are causing the outcome differences. In fact, the best-supported conclusions in the Panel report are so compelling that, in my more cynical moments, I find myself wondering why the country needed the Panel at all, which simply confirmed what most reading researchers who are committed to experimentation as an analytical tool already knew and believed. Had you locked the 10 best experimenters studying children's reading in a room and required them to produce a list of the most defensible elementary reading instructional practices based on experimental research, their exit-the-room list would have included most---and probably all---the major points made by the Panel. That could have been accomplished in a few hours rather than the several years the Panel required.

Narrowness of the NRP

Despite the believability of what the Panel concluded, the Panel was unacceptably narrow in its consideration of reading instruction. I come to this conclusion despite my enormous respect for the individuals making up the Panel (and I might add, the

predecessor group producing PRD). Even within the Panel was at least one voice calling for a broader conceptual approach, Joanne Yatvin, a reading educator serving a school district in Oregon. The Panel's report concluded with her minority view that a number of instructional issues were never even considered for inclusion by the Panel but should have been addressed by a body charged to review the research-based knowledge about teaching children to read.

I find it puzzling that scientists as good as the ones on the Panel could have convinced themselves to take these conceptually and methodologically narrow approaches. The conceptual narrowness and the showcasing only of effects replicated many times over dooms the NRP report to obscurity in my view. I would be surprised if the document is still being cited a decade from now. Excellent integrative scholarship produces new insights, and the authors of excellent, integrative scholarly documents capture a great breadth of scholarship in their conceptualizations. Although frequently replicated effects are, of course, represented in definitive summaries, so are emerging findings, ones documented in only a few studies or perhaps in only one excellent investigation. By definition, the research cutting edge of the field of instructional science is not over-studied problems but rather, exciting new findings that are inspiring additional scientific investigation and explorations. For many examples of research summaries that are of enduring significance because they cover well-supported conclusions in the context of many possibilities being considered by the scientific community, see the three editions of the Handbook of Reading Research (Pearson, Barr, Kamil, & Mosenthal, 1984; Barr, Kamil, Mosenthal, & Pearson, 1991; Kamil, Mosenthal, Pearson, & Barr 2000) and Theoretical Models and Processes of Reading (e.g., Ruddell, Ruddell, & Singer, 1994).

What Other Findings Could the Panel Have Addressed?

I would have felt better if the NRP had included just one more chapter devoted to emerging findings produced in arguably well-controlled studies. What follows in this section are some of the findings that could have been covered in a chapter about instructional directions that have at least a little bit of support. These directions should have been in NRP, if the purpose was to inform the public about beginning reading instruction and intervention that deserve additional study, and, in some cases, implementation. I came up with this list simply by reflecting on the literature I used when I wrote my book on balanced literacy instruction as well as with recent issues of the most visible journals publishing work pertaining to reading instruction. As I did so, I focused only on experimental and quasi-experimental studies, to be consistent with the Panel's methodological strictures.

Instruction at home. The Panel could have said something about the impact of home experiences on literacy development, for schools are not the only environments for important reading instruction. Parents can be taught to interact with their children in ways that promote literacy achievement. For example, they can be taught how to read storybooks with children so as to increase language skills, including knowledge of vocabulary (Arnold, Lonigan, Whitehurst, & Epstein, 1994; Dickinson & Smith, 1994; Valdez-Menchaca & Whitehurst, 1992; Whitehurst et al., 1994). One of the most interesting studies in recent years was Morrow and Young's (1997) demonstration that parents of primary-level students can be taught to interact with their children over the literacy tasks that are the focus of contemporary primary instruction. The parents learned

to do more storybook and magazine reading with their children, teach vocabulary to their youngsters, and write journals as a family activity. Student reading and writing improved for the children in families who were taught to be better literacy teachers. Jordan, Snow, and Porche (2000) evaluated a similar program, reporting substantial language gains in children as a function of the intervention.

Television. The Panel could have said something about the most frequently encountered technological media that touches the lives of children---television. Public television dollars have been well spent on Sesame Street as a means of increasing reading readiness skills, with early letter skills, in particular, improved by the lessons taught by Big Bird and associates (Anderson & Collins, 1988; Ball & Bogatz, 1970; Bogatz & Ball, 1971). New television technologies, such as captioning, also can increase children's word recognition and vocabulary skills (Koolstra, van der Voort,& van der Kamp, 1997; Koskinen, Wilson, Gambrell, & Neuman, 1993).

Community resources. The Panel was silent about greater community resources that can promote young children's literacy, such as volunteers who tutor children in reading, and in doing so, improve early reading skills (Baker, Gersten, & Keating, 2000; Elbaum, Vaughn, Hughes, & Moody, 2000; Fitzgerald, 2001; Invernizzi, Juel, & Rosemary, 1997; Wasik, 1998). When books are made available to young children---for example, through community efforts such as Reading is Fundamental---children are more likely to engage in literacy-promoting activities, with the result enhanced language and literacy skills (Koskinen et al., 2000; Neuman, 1999).

Whole language instruction. The Panel could have said something about the

positive effects of the most pervasive approach to reading instruction in schools in the 1990s. Whole language interventions at school do seem to promote some general, beginning understandings about reading and writing (e.g., Dahl & Freppon, 1995; Graham & Harris, 1994; Morrow, 1990, 1991; Neuman & Roskos, 1990). Literature-driven instruction increases children's autonomous reading (e.g., Morrow, 1992; Morrow, O'Connor, & Smith, 1990; Rosenhouse, Feitelson, Kita, & Goldstein, 1997). Instruction featuring strong connections between literature and concept learning increases academic curiosity and engagement as well as use of comprehension strategies (Guthrie, Anderson, Alao, & Rinehart, 1999; Guthrie, Wigfield, & VonSecker, 2000). Experiences with literature also increase understanding of the structure of stories (e.g., Feitelson, Kita, & Goldstein, 1986; Morrow, 1992; Rosenhouse et al., 1997), children's vocabulary, and conceptual understandings (e.g., Elley, 1989; Morrow, Pressley, Smith, & Smith, 1997; Robbins & Ehri, 1994; Rosenhouse et al., 1997). Children's comprehension of the ideas in text increase when they have conversations about literature with peers and teachers (Van den Branden, 2000). In short, the Panel could have acknowledged the scientific literature documenting the effectiveness of many whole language practices in promoting literacy in young children.

The Panel also could have discussed the available scientific evidence about when whole language is not very effective, for example, when students who are at risk of school failure because of socio-economic status and are evaluated with standardized measures (Jeynes & Littell, 2000). In fact, quite a strong case can be made that whole language is not very effective in promoting development of phonemic awareness and word recognition skills, especially for students who are already at risk for difficulties in

beginning reading (Stahl, McKenna, & Pagnucco, 1994; Stahl & Miller, 1989). There is also credible experimental evidence that casts doubt on the effectiveness of specific whole language practices. These include natural approaches for learning to spell (Graham, 2000), developing word recognition skills through reading of predictable texts (e.g., Johnston, 2000), and stimulating vocabulary growth through incidental learning of words in text (Swanborn & De Glopper, 1999). In short, the Panel could have done a great deal of good for educators by attempting to separate out the instructional wheat from the instructional chaff in whole language, for there is both wheat and chaff in what is conventional instruction for many children in American classrooms.

Language of instruction. The Panel might have acknowledged evaluations of whether beginning literacy instruction should occur in the child's first language, for language of instruction is a variable that is being manipulated by policymakers and can be evaluated in carefully controlled, contrastive studies. Although it is uncertain based on all available evidence whether language of instruction makes much difference in educational achievement (Rossell & Baker, 1996), there is some evidence that it might (Carlisle & Beeman, 2000; Greene, 1997). A related direction is that exposure to a second language can have positive implications for literacy development in the first language, for example, increasing vocabulary knowledge (Cunningham & Graham, 2000).

School reform movements. The Panel might have provided information to the nation about the impact of major school reform approaches on literacy development. For example, Hirsch's Core Knowledge is boosting elementary language arts achievement in initial evaluations (Datman, Borman, & Stringfield, 2000). The mixed impacts on

language arts in Comer approach schools deserve to be brought to the attention of a nation considering how to improve literacy achievement (Cook et al., 1999; Cook, Murphy, & Hunt, 2000), as do the mixed outcomes produced by Success for All (Slavin, Madden, Dolan, Wasik, 1996; Slavin et al., 1996; Smith, Ross, & Casey, 1996). Given the many Title I failures to promote achievement convincingly, Title I successes (e.g., Hiebert, Colt, Catto, & Gury, 1992) deserve a place in a commentary on effective early literacy instruction. Since Reading Recovery is widely disseminated, it would have made a great deal of sense to evaluate the evidence about its efficacy, especially research produced since the reviews of Reading Recovery in the middle 1990s (e.g., Hiebert, 1994; Shanahan & Barr, 1995; Wasik & Slavin, 1993).

No quick fixes. The Panel could have made more of the fact that the interventions they favored are not enough. There are no quick fixes:

(a) Even effective reading interventions are not permanent fixes for children who struggle to learn to read. That is, the impact of a reading intervention typically is most apparent immediately after the enrichment is provided with the advantage fading over time (Hiebert, 1994; Hiebert & Taylor, 2000; Shanahan & Barr, 1995). This is consistent with a more general conclusion that cognitive interventions can get students on track (Brooks-Gunn et al., 1995; Cicarelli, Evans, & Schiller, 1969), but for the struggling student to stay on track, more is required. The long-term cure is long-term cognitive intervention that is always changing to match the developmentally increasing demands on the child (Campbell & Ramey, 1994). The best instruction for at-risk readers is long-term excellent instruction that monitors and meets their needs (Pressley, 1998, revision in press).

(b) Despite the fact that the NRP focused almost entirely on skills instruction, they neglected some essential literacy skills that can be taught. For example, literate individuals must be able to search documents for information, but the Panel ignored important advances in the teaching of such search skills (Symons, MacLatchy-Gaudet, Stone, & Reynolds, 2001). Literate people also can write. Given the extensive experimental literature documenting that even struggling learners can be taught to write in school in ways that make them unambiguously more literate (Gersten & Baker, 2001), saying nothing about writing was a salient omission by the Panel.

(c) More schooling can make a big difference in early literacy development. Specifically, getting at-risk children into Head Start and other educational programs earlier rather than later may put them ahead of same-age students who did not begin schooling as early (Crone & Whitehurst, 1999). A related approach is to intensify schooling, for example, by reducing class size, which permits more positive teacher-student contact (Stasz & Stecher, 2000). The result can be increased student achievement (Finn & Achilles, 1999; Molnar et al., 1999; Nye, Hedges, & Konstantopoulos, 1999, 2000).

Summary. Much could have been gained by the Panel choosing to examine important emerging findings, ones supported in one or a few well-controlled studies. By taking a review tactic that resulted in ignoring much of the experimental and quasi-experimental research literature pertaining to reading and literacy, the Panel was not able to address the full instructional world that children encounter.

Summative Reflection on NRP

The NRP included the evidence derived from experiments and quasi-experiments supporting the teaching of basic phonemic awareness, phonics, and comprehension skills in school. Teaching such skills can positively improve reading achievement. Even many who are strongly committed to experimentation and quasi-experimentation as powerful tools for understanding the effects of instruction, however, are taken aback by the conceptual narrowness of the Panel's report. Many important, interpretable, comparative studies (i.e., experiments & quasi-experiments) informing how family, technology, and in-school instruction impact children's reading achievement were ignored. There is more known about effective instruction based on experiments and quasi-experiments than the NRP reported many of the interventions that enjoy some support in comparative studies definitely deserve a place in the national consciousness as reflections on the nature of effective beginning reading instruction continue.

The National Reading Panel Ignored

An Excellent Window on Effective Beginning Reading Instruction

One study favored in the NRP was Brown et al. (1996), who evaluated the impact of transactional strategies instruction with grade-2 struggling readers. Over a one-year period, teachers modeled and explained the use of a small set of comprehension strategies (e.g., predicting, visualizing, summarizing) and students practiced using the strategies during small-group reading of stories. As they read, students reported which strategies they were using. In contrast, in control classes, the students experienced a conventional whole language curriculum, which included little comprehension strategies instruction. After a year, massive differences in reading comprehension favored the students

receiving transactional strategies instruction over the whole language control participants. Particularly striking, the strategies-instructed students did better on standardized tests and remembered more from stories read. When they read stories on their own and thought-aloud as they did so, the strategies-instructed readers were much more active readers than children in the control group. In short, transactional strategies instruction had a big impact on the reading of weaker grade-2 readers.

The NRP made an important error in the discussion of transactional strategies instruction: They attributed the development of the approach to me and my associates. In fact, we had little to do with its development. Rather, transactional strategies instruction was the invention of educators who read the research literature and developed comprehension instruction that made sense in their settings. Several years of observations, interviews, and ethnographic analyses in these settings resulted in the framework that is now called transactional strategies instruction (Pressley et al., 1992). My colleagues and I assumed from the outset of that work that much could be learned about effective reading instruction by studying carefully those who taught comprehension strategies well, consistent with the assumptions of a huge field in cognitive psychology relating to expertise (Chi, Glaser, & Farr, 1988). The Brown et al. (1996) investigation favored by the Panel could not have occurred without the years of qualitative research that preceded it.

When third party reviewers attempt to summarize scientific evidence, especially individuals fairly far removed from the work, they often lack a sense of the history of the research they are summarizing, in this case, failing to recognize who conceived of transactional strategies instruction and how it evolved in real school settings. The result

of such ahistorical writing can be important misrepresentations that might even reduce the ultimate impact of the report. For example, I wonder if some readers of the NRP might have found transactional strategies instruction more credible if they knew that real educators developed it rather than university-based researchers.

Indeed, depiction of real reading instruction occurring in real schools was not much in evidence at all in the NRP, reflecting, in part, a complete rejection by the Panel of qualitative approaches to research. Qualitative analyses of real reading instruction have produced many important insights about the complexities of teaching literacy---the many elements in effective instruction, how the elements can relate to one another, and what should be measured to document the effects of instruction on young readers. Qualitative methods have been used to illuminate what goes on in whole schools and classrooms where literacy instruction is going well.

How does a qualitative researcher come to understand instruction in a school or a classroom? She or he spends a great deal of time observing the school or classroom, making detailed notes about what goes on there. The analysis of such data begins by the researcher developing categories to capture what is happening, for example, perhaps noting that the instruction in a classroom includes phonics work, reading of literature, and particular classroom routines. As observations continue, category development is elaborated, but there is also attention to understanding how the categories relate to one another (e.g., how phonics relates to the literature being read, how classroom routines support or do not support literacy instruction). Key players (e.g., principals, classroom teachers) are interviewed as well, with the interviews largely based on the observations and analyses of observations. Hence, the interviewer might ask, “Is there a relationship

between the particular phonics skills being taught and the literature currently being read?” or “What is the routine structure of your phonics lessons over days?”

Observations, analyses, and interviews continue until the researchers are generating no new insights about the classrooms they are observing (i.e., no new important categories are emerging nor are new important relationships between categories being identified). The qualitative studies considered in the remainder of this section also involved cross-case analyses, determining similarities and differences across settings especially similarities and differences between effective and ineffective settings. This work was thorough, systematic, and definitely scientific, and as a scientist identifying with producing such research, I am absolutely offended that it was not part of a scientific report purporting to be “an evidence-based assessment of the scientific research literature on reading and its implications for reading instruction” (cover, NRP). Qualitative work should have been included in a document claiming to assess scientific research on reading instruction.

School-Level Analyses

There was much research on effective elementary schools in the last quarter of the 20th Century (Edmonds, 1979; Firestone, 1991). Effective schools researchers often focused on “outlier” schools, institutions that were exceptionally effective given their context (e.g., schools producing high achievement in lower socio-economic, urban neighborhoods). A number of intensive case studies of such schools have been conducted. A consistent pattern emerged across these case analyses, with outlier effective schools having the following characteristics (Firestone, 1991): (a) They have strong administrative leadership. (b) There are high expectations for all children. (c)

They are safe and orderly environments, without being overly rigid. (d) The top resource priority is student acquisition of basic school skills. (e) Student progress is carefully monitored.

Scholars at the Center for the Improvement of Early Reading Achievement (CIERA) have recently carried out studies in the effective schools tradition, ones aimed at identifying the characteristics of elementary schools that are especially effective in stimulating students' literacy development. Taylor, Pearson, Clark, and Walpole (2000) studied 14 schools across the United States, with each having a high proportion of students living in poverty. In each of these schools, two teachers at each grade level (kindergarten through grade 3) were observed, with achievement in classrooms carefully analyzed. In particular, word-level measures (word recognition accuracy and fluency) and comprehension measures were taken at both the beginning and end of the school year. Based on improvements in reading performance over the school year, the researchers classified the schools as most, moderately, or least effective in promoting student literacy. The most effective schools included more small group instruction, more coaching (i.e., scaffolding) by teachers, more teaching of phonics with an emphasis on application during real reading, more higher-order questioning (i.e., questions requiring inferences and integration), greater outreach to parents, and more independent reading. There was greater balancing of skills and holistic instruction (e.g., reading complete texts, composition writing) in effective schools and greater student engagement (i.e., students spent more time productively reading and writing). In summary, Taylor et al. (2000) used classroom data to develop an understanding of schools with high literacy achievement.

Classroom-Level Studies

Michael S. Knapp and Associates (1995) studied instruction and achievement in 140 elementary classrooms serving students living in poverty in three states. They found that reading achievement was most striking in classrooms in which meaning-making was emphasized. In these classrooms, there were many opportunities to read.

Reading and writing were integrated activities (e.g., students wrote in response to what they read). Students and teachers often discussed stories and books that were being read. The focus was on the deeper meanings in text rather than literal recall, and discrete skills were taught in the context of reading and writing of real texts. Sadly, this meaning orientation was observed in only about 30% of classrooms. Moreover, teachers who emphasized meaning in reading did not necessarily do so in writing or mathematics. That is, teaching for meaning in reading seemed to be a specialized orientation or competency rather than part of a general curricular emphasis on meaning. Those who took such a meaning approach also took risks, however, for they worked in the contexts of school districts emphasizing skill competencies as evidence of reading achievement.

Wharton-McDonald, Pressley, and Hampston (1998) observed reading instruction in nine grade-1 classrooms in upstate New York, over the course of a school year. They discovered that literacy achievement was especially high in three of nine classrooms studied. That is, in these classrooms, by the end of the school year, students were reading the kinds of books expected of end-grade-1 readers, and they were writing long compositions that were coherent and mechanically strong. In contrast, in the other six classrooms, fewer students were reading grade-level texts, and many students only wrote

very short compositions, often with salient capitalization, punctuation, and spelling deficiencies. That is, even high frequency words were misspelled, and the invented spellings of low-frequency words did not permit reasonable guesses about them. Cross-case analyses were conducted to determine instructional differences between the three high-achievement classrooms and the other six classrooms in the study. Wharton-McDonald et al. (1998) found that instruction was very complex in all nine of the classrooms studied, but there were some very clear differences between the more effective and less effective classrooms. Before detailing those differences, however, I introduce some follow up work to the Wharton-McDonald et al. (1998) investigation.

One shortcoming of Wharton-McDonald et al. (1998) was that it was a regional study, with all the teachers from upstate New York. I was fortunate to become associated subsequently with the Center for English Language Arts Achievement, which could provide funds for a national study of similar design. In collaboration with Richard Allington, Cathy Collins Block, Lesley Morrow, and some of their then-graduate student colleagues, Ruth Wharton-McDonald and I carried out an ethnographic study of more grade-1 classrooms (Pressley, Allington, Wharton-McDonald, Block, & Morrow, 2001; Pressley, Wharton-McDonald et al., 2001). The study included classrooms in upstate New York as well as first grades in urban New Jersey outside of New York City, the greater Dallas-Fort Worth area, Madison WI, and northern California. Again, we conducted cross-case analyses of classrooms where achievement seemed high, that is, in which the first graders mostly were reading grade-level books, end-of-the-year writing was long and mechanically impressive relative to other first grades, and engagement during literacy instruction was high. The conclusions emerging from this study (Pressley,

Allington et al., 2001; Pressley, Wharton-McDonald et al., 2001) were strikingly similar to the conclusions produced in Wharton-McDonald et al. (1998). Instruction in grade 1 was extremely complicated. What goes on in effective classrooms? All of the following:

- There's excellent classroom management.
- The classroom is positive in tone, with much reinforcement of students and a generally cooperative atmosphere.
- There are many word-level, comprehension, and writing skills taught explicitly.
- There are many excellent literature experiences, with the classroom flooded with literature for the children to experience.
- Excellent classrooms are very busy academically, with the students doing a great deal of actual reading (i.e., in contrast to reading-related activities, such as completing worksheets) and writing.
- Teachers make certain students are doing tasks matched to their competency level, with demands on students accelerating as their competencies improve.
- Teachers provide much support, scaffolding student learning---that is, monitoring carefully when students need help and providing just enough assistance to foster the student's progress, getting them started in the right direction rather than doing the task for the student.
- Effective teachers encourage students to self-regulate, to do academic tasks for themselves as much as possible. The teacher's goal is not to be in charge of the students, but rather, for the students to be in charge of

themselves and their reading and writing.

- There are strong connections across the curriculum, with reading and writing connected to, articulated with, and embedded in content area learning (e.g., social studies, science).

The most effective grade-1 classrooms contrasted in important ways with the least effective grade-1 classrooms. In both the New York-based and the national study:

(a) There was much more academic learning going on in the classrooms of the most effective compared to the least effective classrooms. In the most effective classrooms, students were always reading and writing. (b) Effective teachers really emphasized that their students self-regulate, but ineffective teachers required students to be under their control. (c) Teaching was largely scaffolded in effective classrooms, with teacher monitoring and support matched to student needs much less common in the classrooms of the least effective teachers. (d) Instructional balance was transparent in the most effective classrooms in that many skills were taught explicitly, although students were reading whole texts and doing real writing (i.e., compositions). That is, even when there were lessons on isolated skills, the lessons did not overshadow holistic activities.

In summary, my colleagues and I developed a grounded theory of what happens in effective grade-1 classrooms, especially relative to less effective ones. We found massive instructional differences.

The qualitative methods used by my colleagues and me, as well as by Knapp and Associates and the CIERA group, cannot provide definitive causal conclusions. In particular, we do not know if the instructional differences observed between effective and ineffective teachers caused the achievement differences observed in these classrooms. It

may be possible to do a true experiment in which young teachers are taught to teach as effective teachers teach, however. If that proves possible, and if achievement is higher in the classrooms of teachers so developed relative to achievement in classrooms of teachers who teach otherwise, that would be evidence to support a causal conclusion.

Although Alysia Roehrig and I are working on such a comparative study, we are doing so fully aware that such an experiment ultimately may prove impossible. A major, potential obstacle is that all teachers may not be able to learn to teach as effective teachers do. If so, perhaps the teachers who can learn to teach as effective teachers do have other characteristics that also promote student achievement. Thus, although my colleagues and I are attempting to do experimental work on effective teaching as identified in the ethnographic work described in this section, we are not certain that we will be successful in producing definitive causal data.

Qualitative studies of primary-level literacy instruction are producing portraits that are theories (see Lawrence-Lightfoot & Davis, 1997) about what primary-level instruction can be at its best. In a nutshell, effective literacy instruction balances skills teaching and holistic literacy experiences. Given a long history in education of practice developing in response to theory, some may attempt to put this theory into practice before definitive causal tests of it are available, assuming the theory proves testable. That is, reading educators, principals, and reading supervisors will try to encourage primary-level teachers to teach like the more effective teachers observed in the work considered in this section. That's all right by me. In fact, in writing the book (i.e., Pressley, Allington et al., 2001) that details the nature of the outstanding grade-1 instruction, Dick Allington, Ruth Wharton-McDonald, Cathy Collins Block, Lesley Morrow, and I intended to

encourage emulation of the most effective teachers we observed. This reflects a healthy relationship between scientific research and classroom practice, with scientifically produced information about excellent practice shaping what goes on in real classrooms. A serious summary of the scientific evidence pertaining to reading instruction should include science that has such potential to inspire educators.

I emphasize that the work reviewed in this section is only illustrative of work missing from NRP, but it is an important illustration. In her last-page-of-the-NRP commentary, Yatvin made the point that reading researchers had advised the Panel to include ethnographic work. The work reviewed in this section makes clear the validity of Yatvin's conclusion that the exclusion of such work was neither logical nor fair. It was illogical in that the depiction of the state of the science of reading instruction is much less complete without ethnographies. Although it was not fair to the very good scientists who have labored hard to produce such work, it really cheated educators who need to know about scientifically defensible practices and ultimately the children they serve. As a scientist dedicated to improving the education of children, my blood boils when I think that the NRP chose to keep critically important scientific insights about excellent reading instruction from teachers and other educational decision makers who are struggling to incorporate scientifically-sound practices into schools. The Panel's decision-making favored methodological parochialism over the advancement of science with high potential for improving literacy education in the nation.

Discussion:

What Do We Know About Excellent Beginning Reading Instruction?

Based only on consideration of the evidence touched upon in this paper, most reasonable people would conclude that we know a lot about excellent beginning reading instruction and the conditions associated with successful beginning reading. Good reading instruction begins at home. Moreover, parents who do not interact well or extensively with their preschoolers in ways that promote literacy (e.g., storybook reading) can be taught to do so. When children enter the primary grades, parents can also be taught how to interact with their children with respect to school literacy tasks. Although improving parent-child interactions is very important, many children in contemporary American society will watch a great deal of television. The efforts of the folks at public television to produce programming to impact literacy skills have generally been successful, with Sesame Street their best researched effort. As the technology of television has evolved, there are new possibilities, however. For example, captioning permits children to see print as they hear the words spoken on television, providing incidental learning opportunities. As attractive as television is, books are also very attractive. If the child's world can be filled with them, adults in that world have more opportunities to tempt the child to read and reflect on the ideas in books. If the child's world is also filled with people who will work with her or him (i.e., tutor the child), early literacy development is also more certain. A defensible approach for enriching the preschooler's world is to place the child in a high quality preschool experience, such as Head Start sometimes is.

School is rich with instructional possibilities that can promote reading achievement. Yes, instruction should stimulate phonemic awareness, develop phonics skills, and teach young readers how to understand the messages in text, as concluded by the Panel. There are also good achievement-related reasons, however, to encourage other forms of skills instruction (e.g., text search, writing) as well as more holistic instruction, including many of the experiences associated with whole language. Structural adjustments, including reducing class size and teaching in the child's first language might increase instructional impact. Making computer technology available in the classroom can help. Professional development about how to improve literacy instruction influences literacy achievement.

There are no quick fixes with respect to improving children's literacy. There's no reform package that a school can buy that certainly delivers improved achievement. The influences of packaged reforms are often uneven or small. Moreover, many children who benefit from the intervention targeting their present needs will require additional support as new challenges are encountered. It is because there is no single quick fix and the instructional needs vary with the child's reading developmental level that it is important to emphasize that a variety of interventions do enjoy some scientific support.

As optimistic as I am that we know more than ever before about how to improve early reading achievement, there is a down side. Much of what we know is not being employed.

Are We Using What We Know?

My colleagues and I have logged thousands of hours in primary-level classrooms in the past decade. An important insight from all this observation is that the instruction that compelled the Panel is often missing from classrooms.

Most striking, there is little phonemic awareness instruction as studied extensively by researchers in the past decade and described in the NRP. When kindergarten and grade-1 children engage in the sound manipulation exercises that constitute phonemic awareness instruction, it is mingled with other letter-level instruction, such as learning the names of letters and their associated sounds. To teachers' credit, however, evidence is emerging that phonemic awareness and letter-sound training together do more to promote beginning reading competence than phonemic awareness instruction alone (Schneider, Roth, & Ennemoser, 2000).

Although phonics instruction is much more prevalent than phonemic awareness instruction ---in both effective and ineffective classrooms, it is not as the Panel conceptualized it. The Panel made strong distinctions between synthetic phonics instruction (i.e., instruction to sound out words, letter by letter, with sound-by-sound blending) versus phonics instruction emphasizing word parts (e.g., word families, such as bat, cat, fat, mat, pat, rat, sat, vat), citing studies where these approaches to teaching phonics had been studied separately. This is despite the fact that sounding out of words and use of word parts are almost always taught together as strategies. Teachers complement synthetic phonics with teaching of word families and the use of word parts to recognize words. To the teachers' credit, evidence is emerging to support this

decision, with combined phonics approaches improving word recognition skills more than single-dimensional approaches, such as synthetic phonics (Lovett et al., 2000).

Guided oral reading varies greatly with the size of the class. Even teachers most dedicated to guided oral reading often are able to offer it only on a very limited basis, perhaps every other day. It helps when there are parental volunteers in the room or paid aides, but the more economically impacted the community, the shorter the supply of adults in classrooms. Many teachers ask children to read at home nightly with their parents who might also provide some guidance with respect to reading, but some children have parents who simply do not care enough or do not have the time to do so.

More positively, vocabulary instruction in various forms is common in the primary grades. When the classroom is flooded with literature and there is much interaction about great stories, there are many opportunities for incidental learning of vocabulary. In classrooms where children compose daily, there are many opportunities to use new vocabulary.

There is little comprehension strategies instruction in primary-level classrooms. Very, very few elementary teachers teach children to use a repertoire of comprehension strategies as occurs in transactional strategies instruction.

As far as in-service education is concerned, teachers rarely report that an in-service changed their teaching. In-services more often are one-day or afternoon affairs, which are attended, but little else.

With respect to technology, even drill-and-practice is relatively rare. Often classrooms lack up-to-date computers. Elementary classrooms rarely have enough

computers for students to use the machines daily or for an extended period of time. Also, classroom computers often are loaded with games.

In summary, most of the instruction favored in the NRP is not daily fare for many students in kindergarten through grade-3 in the United States at the beginning of this new century. Many who read my work and that of my colleagues often focus only on the exceptionally positive and effective classrooms that we observed. In those classrooms, extensive teaching of word-level and higher-order comprehension and composition skills is a way of life. The sad fact is that those classrooms are definitely in the minority, with the extent and intensity of word-level and higher-level literacy instruction much lower in typical American primary-level classrooms.

By not considering the qualitative evidence that is available, the Panel missed an opportunity to make a compelling case that the instruction they favor is being neglected. Many, many primary-level children are not getting phonemic awareness instruction, phonics teaching, guided reading practice, vocabulary enrichment, comprehension strategies instruction, and computer-learning opportunities that could benefit them. A complete science of instruction is more than experimental; it is also informative about how instruction really occurs in school, both what is happening and what is not occurring.

Constructing a Credible and Credibly Complete Document About Scientifically-Defensible Instruction

A complete summary of the scientific evidence on reading instruction cannot depend only on problems that have already been studied in great depth. In fact, a summary of the scientific evidence that includes only findings that are massively supported is an historical document more than a scientific document, a look backwards.

Important scientific discoveries always start out as findings in a few studies. This paper has included many examples of conclusions that are supported in a few good studies but not in the large number of investigations required to do a credible meta-analysis. Good integrative science looks forward, pulling together the most important emerging themes and findings, stimulating dramatic new investigations rather than incremental studies intended to fine-tune already classic outcomes. Many scientists doing cutting-edge science did not see the fruits of their labor in the pages of the NRP, which is tragic, because many of these findings already are potentially useful to educators.

Because there's more science that should be made available to educators than covered in the recent NRP or in PRD, there is a real need for another document summarizing as completely as possible what is scientifically defensible in beginning reading instruction. How should such a document be constructed? At least, the NRP and PRD processes taught us much about how not to proceed, if the goal is to provide credibly comprehensive coverage of the science pertaining to early reading instruction. Some of the "don'ts" apparent from the previous efforts include the following:

- Don't decide to cover only a very few topics in reading instruction. Make certain there are checks so that important work is not excluded and the work of particular scientists is not being emphasized because of membership on the reviewing body. The latter issue in particular is a delicate one, for the very best scientists who should be tapped to serve such an integrative scholarly effort are often contributing some of the very best work in the field.
- Don't rely on a very few scientists to develop the document. It is better

to involve a broad range of scientists who represent the full range of interventions being documented as affecting reading instruction and achievement.

- Don't rely on a literature-integration methodology that requires many replications for conclusions to be drawn.
- Don't limit acceptable evidence to that produced in experiments and quasi-experiments. Even if experiments and quasi-experiments provide more certain information about causality than other methodological approaches, very good scientists are using more than experiments and quasi-experiments to inform about instructional issues.

Then, there is one final “don't” that has not been considered at all until this point. Don't let any agency involved in the funding of research to be in a position of control, for, even if the agency does not attempt to push its own agenda, that will be the perception. It would be far better if a research organization without a financial conflict of interest (i.e., that does not depend on the Congress perceiving it to be worthy as the referee of reading research funds) sponsored the project. The National Reading Conference is such an organization.

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