

**HEARING ON TITLE I (EDUCATION OF THE DISADVANTAGED) OF THE  
ELEMENTARY AND SECONDARY EDUCATION ACT**

G. Reid Lyon, Ph.D.

Chief, Child Development and Behavior Branch National Institute of Child Health and Human  
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Learning to read should be considered a fundamental right in our society today. Reading is necessary skill for succeeding academically in today's schools and also in society. Further, the psychological, social, and economic consequences of reading failure are legion. It is for this reason that the NICHD considers that reading failure not only reflects a critical educational issue, but a significant public health problem as well.

NICHD reading research programs, which, to date, have studied over 34,000 children and adults, have taught us that learning to read is a formidable challenge for approximately 60% of our nation's children, and for at least 20% to 30% of these children, reading is one of the most difficult tasks that they will have to master throughout their educational careers.

This is indeed unfortunate. When children do not learn to read, their general knowledge, their spelling and writing abilities, their mathematics skills and their oral language abilities suffer in kind. Learning to read serves as the major avenue to learning about our and other's cultures, societies, and history, not to mention language arts, science, mathematics, and the other content subjects that must be mastered in school. Within this context, reading skills serve as THE major foundational academic ability for all school-based learning. Without the ability to read, the opportunities for academic and occupational success are limited indeed. Moreover, because of its importance, difficulties learning to read squashes the excitement and love for learning that most children enter school with.

It is embarrassing and frequently devastating to read poorly in front of peers and to demonstrate this weakness on a daily basis. It is clear from our NICHD-supported longitudinal studies that follow children from kindergarten into young adulthood that youngsters who read with difficulty are not accustomed to such failure. By the end of the first grade we begin to notice substantial decreases in self-esteem, self-concept, and the motivation to learn to read. As we follow the children through elementary and middle school grades these problems compound, and in many cases our children are unable to learn about the wonders of literature, science, mathematics, and social studies because they cannot read grade-level textbooks. By high school, these student's potential for entering college has decreased to almost nil, with few choices available to them with respect to occupational and vocational opportunities. These students tell us that they hate to read because it is such hard work and they feel stupid. As one adolescent in one of our longitudinal studies remarked recently, "I would rather have a root canal than read".

In short, if we do not teach our children to read, they simply cannot take part in our country's democratic process; their gifts typically go unnoticed, and they are literally

disenfranchised from contributing their fullest to their lives and to society.

## **THE IMPORTANCE OF SCIENTIFICALLY-BASED RESEARCH INSTRUCTIONAL APPROACHES TO READING PROGRAMS**

There is no doubt that our nation's children who are most at-risk for reading failure are those who enter school with limited exposure to oral language and literacy interactions from birth until entry into kindergarten and who have little prior understanding of concepts related to phonemic sensitivity, letter knowledge, print awareness, the purposes for reading, and general verbal concepts, including vocabulary. Children raised in poverty, youngsters with limited proficiency in the English language, children with speech and hearing impairments, and children from homes where parent's reading skills and/or practices are limited are clearly predisposed to reading failure. In short, there is an epidemic of reading difficulties among disadvantaged children in the United States. And, it is typically these children who are eligible for and receive instructional assistance via programs made possible through Title I of the Elementary and Secondary Education Act. However, despite the existence of educational programs supported through Title I funding, the proliferation of reading failure among disadvantaged children continues, in the main, unabated. Why does this unfortunate trend continue, particularly when many Title I educational programs are described as employing research-based instructional approaches? More specifically, given that the term research-based implies that programs have been objectively evaluated to determine for which children the programs are most appropriate, why do so many disadvantaged children continue to flounder in reading? One major reason is that the term research-based currently means many things to many people, with significant variations in the scientific quality of the research described by the use of the term. For example, some instructional reading programs touted as research-based may be based upon mediocre and substantially flawed scientific studies, while other instructional programs are based on studies that may meet rigorous scientific criteria for research quality. The problem is that many in the field of education do not know the difference and adherence to scientific quality and scientific criteria has not been the guiding force in selecting and implementing instructional reading approaches in Title I programs. As such, there has been a consistent disconnect between research studies of high scientific quality and the development and implementation of reading approaches and programs in Title I classrooms.

### **WHAT DOES A RESEARCH-BASED MEAN? WHAT SHOULD IT MEAN?**

In a sense, an idea of an appropriate use of the term research-based can be derived from several common-sense questions a parent may ask when attempting to determine if a particular instructional reading approach or program in use in a classroom is appropriate for their child. One general question might be, Has this approach or program been used successfully before with children who are similar to mine in language development, reading development, socioeconomic status, and in classrooms and with teachers that are similar to my child's? Likewise, who are the children who did not benefit from the approach or program, and why did they not respond favorably? A second question might be, what are the measures of success? Reading achievement scores? Improvements in motivation and self-concept? Teacher enthusiasm? A third question might be, do the measures or observations of these different aspects of success produce reliable or consistent findings

across observers and settings? A fourth question might be how many times has this approach or program been evaluated or studied and similar results obtained? An additional question might be were the research studies upon which the instructional approach or program is based published in a respectable peer-reviewed scientific journal?

In short, common-sense questions like these reflect the scientific essence of the term research-based. Specifically, the instructional approach or program has been developed on the basis of peer-reviewed research that has been conducted with well-defined samples of children similar to those for whom the program will be implemented (representativeness); the data obtained are consistent across measures and observers (reliability); and, the research has been replicated with independent samples. In order for a consumer to determine whether the research basis for an instructional approach or program is representative, reliable, and replicable, the published research study (ies) must describe in sufficient detail the characteristics of the children under study, the characteristics and training of the teachers, the classroom settings, the teacher-student interactions, the specific components of the instructional program, and the research design to permit further independent replication and appropriate implementation of the approach or program.

Too often, discussions among researchers about the term research-based tend to pit those who conduct quantitative research with those who employ qualitative methods in attempting to understand the effects of instructional programs. This type of polarization, similar to debates about whole-language versus phonics approaches to reading instruction, is clearly not productive and confuses parents, teachers, and other consumers about the appropriate use of research in guiding instructional practices. Ultimately, high quality scientific research on instructional reading (and math) programs must combine research strategies that are experimentally responsible, test specific well defined ideas, yield data that are reliable, and are describe sufficiently to permit replication, with research methods that provide a qualitative, albeit reliable view of the complexity and the process involved in imparting reading concepts to children of varying abilities in classroom settings. The question is NOT whether quantitative, hypothesis-driven research methods are more powerful than descriptive methodologies embodied in ethnographic studies, case histories, or classroom observation studies. The question, which must guide us in establishing a genuine research basis for instruction with children eligible for Title I services, is WHICH COMBINATIONS OF RESEARCH METHODS AND APPROACHES ARE MOST APPROPRIATE FOR WHICH SPECIFIC RESEARCH QUESTIONS. Likewise, questions about instructional decisions that reflect an either-or phonics/whole language program choice must be replaced by questions that embrace the complexity of reading instruction. As I have testified earlier before this Committee, this question should be, FOR WHICH CHILDREN, ARE WHICH READING INSTRUCTIONAL APPROACHES/METHODS MOST BENEFICIAL AT WHICH STAGES OF READING DEVELOPMENT IN WHICH CLASSROOM SETTINGS.

**STATUS OF SCIENTIFICALLY DERIVED RESEARCH KNOWLEDGE  
RELEVANT TO READING DEVELOPMENT, READING DIFFICULTIES,  
AND READING INSTRUCTION**

Reading development. Our NICHD-supported reading research program, which consists of 42 sites in North America, Europe and Asia, continues to obtain data that converge on the

following findings. Good readers of alphabetic languages (e.g., English) are phonemically aware, understand that the alphabet represents the sounds of speech and can apply this knowledge accurately and fluently to the development and use of phonics skills when reading new and less familiar words. Given the ability to rapidly and automatically decode and recognize words, good readers bring strong vocabularies and good syntactic and grammatical skills to the reading comprehension process, and actively relate what is being read to their own background knowledge via a variety of strategies.

It is also clear from our and other's research that learning to read is a relatively lengthy process that begins very early in development and clearly before children enter formal schooling. Children who receive stimulating literacy experiences from birth onward appear to have an edge when it comes to vocabulary development, an understanding of the goals of reading, and an awareness of print and literacy concepts. Children who are read to frequently at very young ages become exposed in interesting and exciting ways to the sounds of our language, to the concept of rhyming and alliteration, and to other word and language play that serves to provide the foundation for the development of phoneme awareness. As children are exposed to literacy activities at young ages, they begin to recognize and discriminate letters. Without a doubt, children who have learned to recognize and print most letters as preschoolers will have less to learn upon school entry. The learning of letter names is also important because the names of many letters contain the sounds they most often represent, thus orienting youngsters early to the alphabetic principle - a principle that explains how sounds of speech become associated with the letters of the alphabet. Ultimately, children's ability to understand what they are reading is inextricably linked to their background knowledge. Very young children who are provided opportunities to learn, think, and talk about new areas of knowledge will gain much from the reading process. With understanding comes the clear desire to read more and to read frequently, ensuring that reading practice takes place. Unfortunately, few children who are eligible for Title I services come to school and to the reading task with these advantages.

Reading difficulties. NICHD-supported research conducted over the past 35 years has been able to identify and replicate findings, which point to a number of factors that can hinder reading development among children irrespective of their socioeconomic level and ethnicity. These factors include deficits in phoneme awareness and the development of the alphabetic principle, deficits in acquiring reading comprehension strategies and applying them to the reading of text, the development and maintenance of motivation to learn to read, and the inadequate preparation of teachers.

### **DEFICITS IN PHONEME AWARENESS AND THE DEVELOPMENT OF THE ALPHABETIC PRINCIPLE**

In essence, children who have difficulties learning to read can be readily observed. The signs of such difficulty are a labored approach to decoding or sounding unknown or unfamiliar words and repeated misidentification of known words. Reading is hesitant and characterized by frequent starts and stops and multiple mispronunciations. If asked about the meaning of what has been read, the child frequently has little to say. Not because he or she is not smart enough; in fact, many youngsters who have difficulty learning to read are bright and motivated to learn to read - at least initially. Their poor comprehension occurs because they take far too long to read the words, leaving little energy for remembering and understanding what they have read.

Unfortunately, there is no way to bypass this decoding and word recognition stage of reading. A deficiency in these skills cannot be appreciably offset by using context to figure out the pronunciation of unknown words. In essence, while one learns to read for the fundamental purpose of deriving meaning from print, the key to comprehension starts with the immediate and accurate reading of words. In fact, difficulties in decoding and word recognition are at the core of most reading difficulties. To be sure, there are some children who can read words accurately and quickly yet do have difficulties comprehending, but they constitute a small portion of those with reading problems.

If the ability to gain meaning from print is dependent upon fast, accurate, and automatic decoding and word recognition, what factors hinder the acquisition of these basic reading skills? As mentioned above, young children who have a limited exposure to both oral language and print before they enter school are at-risk for reading failure. However, many children with robust oral language experience, average to above intelligence and frequent interactions with books since infancy show surprising difficulties learning to read. Why?

In contrast to good readers who understand that segmented units of speech can be linked to letters and letter patterns, poor readers have substantial difficulty in developing this alphabetic principle. The culprit appears to be a deficit in phoneme awareness - the understanding that words are made up of sound segments called phonemes. Difficulties in developing phoneme awareness can have genetic and neurobiological origins or can be attributable to a lack of exposure to language patterns and usage during the preschool years. The end result is the same however. Children who lack phoneme awareness have difficulties linking speech sounds to letters - their decoding skills are labored and weak, resulting in extremely slow reading. As mentioned this labored access to print renders comprehension very difficult.

### **DEFICITS IN ACQUIRING READING COMPREHENSION STRATEGIES**

Some children encounter obstacles in learning to read because they do not derive meaning from the material that they read. In the higher grades, higher order comprehension skills become paramount for learning. Reading comprehension places significant demands on language comprehension and general verbal abilities. Constraints in these areas will typically limit comprehension. In a more specific vein, deficits in reading comprehension are related to:

- (1) Inadequate understanding of the words used in the text;
- (2) inadequate background knowledge about the domains represented in the text;
- (3) A lack of familiarity with the semantic and syntactic structures that can help to predict the relationships between words;
- (4) A lack of knowledge about different writing conventions that are used to achieve different purposes via text (humor, explanation, dialogue, etc.);
- (5) Verbal reasoning ability which enables the reader to read between the lines; and
- (6) The ability to remember verbal information.

If children are not provided early and consistent experiences that are explicitly designed to foster vocabulary development, background knowledge, the ability to detect and comprehend relationships among verbal concepts, and the ability to actively employ strategies to ensure understanding and retention of material, reading failure will occur no matter how robust word recognition skills are. Unfortunately, our current understanding of how to develop many of

these critical language and reasoning capabilities related to reading comprehension is not as well developed as the information related to phoneme awareness, phonics, and reading fluency. We have not yet obtained clear answers with respect to why some children have a difficult time learning vocabulary and how to improve vocabulary skills. Our knowledge about the causes and consequences of deficits in syntactical development is sparse. A good deal of excellent research has been conducted on the application of reading comprehension strategies, but our knowledge of how to help children use these strategies in an independent manner and across contexts is just emerging.

### **THE DEVELOPMENT AND MAINTENANCE OF MOTIVATION TO LEARN TO READ**

A major factor that limits the amount of improvement that a child may make in reading is related to the motivation to continue the learning process. Very little is known with respect to the exact timing and course of motivational problems in the learning to read process, but it is clear that difficulties learning to read are very demoralizing to children. In the primary grades, peers and teachers quickly notice reading activities constitute the major portion of academic activities undertaken in classrooms, and children who struggle with reading. Although most children enter formal schooling with positive attitudes and expectations for success, those who encounter difficulties learning to read frequently attempt to avoid engaging in reading behavior as early as the middle of the first grade year. It is known that successful reading development is predicated on practice with reading, and obviously the less a child practices, the less developed the various reading skills will become. To counter these highly predictable declines in the motivation to learn to read, prevention and early intervention programs are critical.

### **INADEQUATE PREPARATION OF TEACHERS**

As evidence mounts that reading difficulties originate in large part from difficulties in developing phoneme awareness, phonics, reading fluency, and reading comprehension strategies, the need for informed instruction for the millions of children with insufficient reading skills is an increasingly urgent problem. Unfortunately, several recent studies and surveys of teacher knowledge about reading development and difficulties indicate that many teachers are under prepared to teach reading. Most teachers receive little formal instruction in reading development and disorders during either undergraduate and/or graduate studies, with the average teacher completing only two reading courses. Surveys of teachers taking these courses indicates consistently that teachers have never observed professors demonstrate instructional reading methods with children, that course work is superficial and unrelated to teaching practice, and that the supervision of student teaching and practicum experiences is fragmentary and inconsistent. At present, motivated teachers are often left to obtain specific skills in teaching phonemic awareness, phonics, reading fluency, and comprehension on their own by seeking out workshops or specialized instructional manuals.

Clearly teachers who instruct youngsters who display reading difficulties must be well versed in understanding the conditions that must be present for children to develop robust reading skills, and must be thoroughly trained to assess and identify problem readers at early ages. Unfortunately, many teachers and administrators have been caught between conflicting schools of thought about how to teach reading and how to help students who are not progressing easily. In reading education, teachers are frequently presented with a "One Size Fits All" philosophy. No doubt, this parochial type of preparation places many children at continued risk for reading failure since it is well established that no reading program should

be without all the major components of reading instruction (phoneme awareness, phonics, fluency, reading comprehension). The critical question that our teachers must learn to ask is which children need what, how should it be taught, for how long, and in what type of setting?

It is hard to find disagreement in the educational community that the direction and fabric of teacher education programs in language arts and reading must change. However, bringing about such change will be difficult. In addition, if teacher preparation in the area of language and reading is expected to become more thoughtful and systematic, change in how teaching competencies and certification requirements are developed and implemented is a must. Currently, in many states, the certification offices within state departments of education do not maintain formal and collaborative relationships with academic departments within colleges of education. Thus, the requirements that a student may be expected to satisfy for a college degree may bear little relationship to the requirements for a teaching certificate. More alarming is the fact that both university and a typical State department of education requirements for the teaching of reading may not reflect, in any way, the type and depth of knowledge that teachers must have to ensure literacy for all.

Reading instruction. Currently, NICHD-supported early reading intervention studies are being conducted at sites in North America. These studies involve the participation of 7,669 children, 1,012 teachers, and 985 classrooms in 266 schools. These studies are typically longitudinal in nature and are designed to assess and intervene with those children identified in kindergarten and first grade to be at-risk for reading failure. NICHD-supported studies over the past 35 years have enabled us to develop reliable and valid early identification and assessment methods for this purpose.

Several of these studies involve the participation of children attending urban schools and who are eligible for Title I funding. In the main, the children come from economically disadvantaged homes, participate in the Federal lunch program, and score in the bottom quartile (below the 25th percentile) in emergent and early reading skills. These youngsters who are at-risk for reading failure are identified in kindergarten and first grade, receive reading instruction through one of several reading approaches and programs, and are studied for a five year period to address the question: "For which children are which instructional reading approaches/programs most beneficial at which stages of reading development and in which classroom environments?"

Two such studies of early reading intervention with disadvantaged children that are of particular relevance are currently being conducted in Houston, Texas and Washington, D.C. The Houston study is now in its sixth year while the D.C. study is entering its third year. Currently, there are 1,553 grade 1 and grade 2 children participating in both sites. In the D.C. Early Interventions Project, 12 schools are participating, with nine schools serving as experimental sites and three schools serving as control sites. Within these schools, children from 80 kindergarten, first and second grades are participating in the project. Approximately 98% of the youngsters are African American with an equal number of boys and girls. All of the schools involved in these studies are Title I eligible, with over 75% of the students enrolled eligible for the Federal lunch program. These longitudinal studies are designed to identify the specific instructional components within different reading programs that are most beneficial to at-risk children at specific stages of reading development. In line with our research findings that converge on the necessity of

developing phonemic awareness, phonics, fluency, and reading comprehension skills in order to become a skilled reader, these studies seek to understand how best to teach these skills. For example, a critical question that is being addressed is the extent to which the instruction in these skills needs to be highly systematic and explicit through decontextualized letter-sound correspondence rules with textual reading practice in controlled vocabulary material or whether the instruction is more beneficial if presented implicitly through incidental learning gained by feedback on reading authentic literature.

The design and conduct of these studies in classroom settings in public schools is a complex enterprise requiring substantial teacher training, monitoring of the instructional protocols to ensure that the interventions are being carried out correctly, and extensive data collection and analysis. Data describing the effects of different reading intervention components and programs on the reading development of Title I children in Houston were recently published in a prestigious peer-reviewed journal in 1998 and I request that this study be made part of the Congressional Record along with my testimony. Preliminary analysis of the Stanford 9 test results for each participating school have now been completed for the D.C. study and have also been previously presented to the NICHD for review and to the Education and Work Force Committee of the United States Congress. The trends in the preliminary D.C. data converge strongly with the published data obtained at the Houston site. Specially, the research indicates that early instructional intervention makes a difference for the development and outcomes of reading skills in kindergarten, first, and second grade Title I children at-risk for reading failure. However, the results also show that not all instructional approaches have the same impact. Specifically, children who received direct and systematic instruction in phoneme awareness, the alphabetic principal and phonics improved in their word-reading skills at a significantly faster rate than children instructed via implicit approaches employing authentic literature. As with any intervention study, these investigations are designed to follow the children over time to determine if the gains achieved last, and contribute to the development of reading fluency and reading comprehension.

It should be pointed out that these studies are part of a long-term research investment made by the NICHD to first study the normal reading process, identify critical elements necessary for efficient reading, identify the developmental course of those elements or components, develop reliable and valid measurement methods and instruments to map development over time and to predict future reading behavior, apply these predictive instruments to identify children at-risk for reading failure, and to determine which instructional approaches are most effective with at-risk children at different stages in their development of reading skills. To be maximally informative, this type of research program must utilize multidisciplinary talents, must study reading development and response to instruction over time in a longitudinal manner, and adhere to the highest standards of scientific quality. Given that this is the case, we can now move to address the second and third questions asked of this witness by the Education and Workforce Committee.

### **WHAT IS THE VALUE OF FOCUSING TITLE I SERVICES AND INTERVENTIONS DURING THE ELEMENTARY SCHOOL GRADES**

NICHD-supported longitudinal studies that have been ongoing since 1983 clearly indicate that children who are at-risk for reading failure must receive early, intensive, and systematic reading instruction prior to the third grade if long term success is to be expected. At least

75% of children who do not receive such instruction continue to have significant difficulties learning to read into their early adult years. Our NICHD-supported studies underway in Florida do indicate that older elementary and middle-grade children can improve their reading skills to a significant extent, but the degree of instructional intensity and instructional duration is massively greater than that required during kindergarten, and first and second grades. As noted in the above discussion, it is not only the timing of the instructional intervention that is critical, but the nature of the instructional components and how the components are taught. Specifically, early intervention that includes the systematic and direct instruction of phoneme awareness, phonics skills, and reading comprehension strategies within a literature-rich context appears critical to fluent word and text reading and comprehension.

**ARE THERE ANY RECOMMENDATIONS THAT CAN BE DERIVED FROM THE NICHD READING RESEARCH PROGRAM THAT THE COMMITTEE MIGHT CONSIDER AS IT PREPARES TO AUTHORIZE TITLE I OF THE ELEMENTARY AND SECONDARY SCHOOL ACT**

We feel, as do many others, that an important use of research evidence is to inform educators, parents, scientists, and policy makers so that the decisions that they make will ultimately lead to improvements in student achievement. Making research evidence relevant to policy and practice requires accountability for student learning, accountability for quality teaching, local capacity for research-based decision making, and a continually growing knowledge base that is accessible, trustworthy, and practical. Without accountability for student learning and teacher quality, there is typically only superficial interest in using scientific research to guide instruction. Moreover, once motivated through accountability, teachers, parents, schools and states must have access to research evidence and be able to implement it appropriately.

For the field of education to become a profession in the fullest sense of the term, it must develop and embrace a trustworthy, reliable base of knowledge from which states, schools and individual teachers can draw specific information when making instructional decisions. Other professions have well-established procedures for evaluating research on various approaches and for agreeing how these findings will be used to help guide professional practice. The recently published report from the National Research Council on Preventing Reading Difficulties in Young Children is a first step in this direction. Through the leadership of the United States Congress, the establishment of the National Reading Panel is now in the process of identifying scientific standards that can be applied to educational research and instructional programs, approaches and methods to determine the scientific quality of these products. But we must ensure that we develop vehicles to make solid trustworthy scientific research information available to teachers in an accessible and practical manner. Specifically, all consumers of research information need to know and trust information that identifies which instructional approaches and programs work and for whom. This information must also be provided to policymakers and the public to engender respect and trust in the educational enterprise. What are some specific steps to accomplish these goals?

We must raise the quality and rigor of all education-related research. It will be important to

ensure that all Federally-supported research adhere to high standards of research quality and we must encourage privately funded research initiatives to embrace these standards as well.

We need to increase the scale of rigorous educational research. At present, OERI, NSF, and NICHD are collaborating to develop and manage large-scale research on the core topics of reading, mathematics, science, and technology. These collaborations are critically important in the development of consistent quality research standards across Federal agencies and the constituencies that they represent.

We must continually synthesize research of high quality that is relevant to instructional practices with children at risk-for academic failure. The key to developing a solid research base that will ultimately inform practice is to demonstrate how research findings converge on a particular instructional practice or principle. The tendency in education to shift capriciously from one instructional “magic bullet” to another is clearly influenced by the field’s inability to develop sustained, serious research efforts capable of establishing convergence and ensuring replication of findings. The National Reading Panel is a critical step in this process of establishing clear quality standards for research and evaluating existing studies with respect to these criteria. I would like to offer the preliminary report from the National Reading Panel for the Congressional Record.

We need to develop a targeted realistic research agenda that is solidly based on the synthesis of research mentioned above. We must clearly understand what we know, what we do not know, and develop comprehensive and continually refined research initiatives designed to close these gaps.

We must strive to improve the quality of consumer information. This might entail a process whereby all Federal agencies adhere to a set of quality research standards for information and materials that are disseminated. Consumers must know and understand the strengths and weaknesses of a given instructional approach, method, or material and must clearly understand the limitations of the research that supports a particular educational product.

We must continue to increase the demand for research-based effective practices and to instill a stronger demand for these practices in all Federal program funding. The funds currently available through the Reading Excellence Act point in the direction of research-based practice more clearly than any Federal legislation to date. This is clearly a critical and important step to ensuring that educational practices are based upon well-defined research foundations.

We must continue to strive to improve the quality and relevance of training teachers at the preservice and inservice levels. No matter how powerful our research findings might ultimately be, the impact of those research investments will be minimal if researchers, professors, teachers, and policy makers do not speak the same language about what constitutes trustworthy quality research and how that information can be implemented in the complex world of classrooms. It is critically important that professional development activities and programs align specifically with ongoing major efforts to employ scientifically research-based practices to enhance student achievement. Our NICHD-supported early intervention studies have taught us that very few practicing teachers are

aware of research-based best instructional practices. As such, we must consider developing comprehensive school-based training programs that are coherent, easily accessible, and meaningful to teachers.