

MEASURING SUCCESS: USING ASSESSMENTS AND ACCOUNTABILITY TO RAISE STUDENT ACHIEVEMENT

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The following is a statement made by Dr. Lyon to the Subcommittee on Education Reform, Committee on Education and the Workforce, U.S. House of Representatives, in Washington, D.C. on March 8, 2001.

Introduction

Good morning, Chairman Castle and members of the Subcommittee. I am Dr. Reid Lyon, Chief of the Child Development and Behavior Branch of the National Institute of Child Health and Human Development (NICHD) at the National Institutes of Health. I am pleased to have been asked to address the Subcommittee on issues relevant to the use of assessments and accountability to raise student achievement, particularly with respect to how these issues and our NICHD reading research findings are reflected in President Bush's reading initiatives. It is also timely that you have requested information about how scientifically based early reading instruction will reduce the need for special education. Recently, Dr. Jack Fletcher of the University of Texas Health Science Center in Houston and I completed such an analysis. I am happy to share those findings with you today.

As you know, the NICHD considers that teaching and learning in today's schools reflect not only significant educational concerns but public health concerns as well. Our research has consistently shown that if children do not learn to understand and use language, to read and write, to calculate and reason mathematically, to solve problems, and to communicate their ideas and perspectives, their opportunities for a fulfilling and rewarding life are seriously compromised. Specifically, in our NICHD-supported longitudinal studies, we have learned that school failure has devastating consequences with respect to self-esteem, social development, and opportunities for advanced education and meaningful employment. Nowhere are these consequences more apparent than when children fail to learn to read. Why? Simply stated, the development of reading skills serves 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, difficulty in learning to read crushes the excitement and love for learning, which most children have when they enter school.

As we follow thousands of children with reading difficulties throughout their school careers and into young adulthood, these young people tell us how embarrassing and devastating it was to read with difficulty in front of peers and teachers, and to demonstrate this weakness on a daily basis. It is clear from our NICHD research that this type of failure affects children negatively earlier than we thought. By the end of first grade, children having difficulty learning to read begin to feel less positive about themselves than when they started school. As we follow children through

elementary and middle school years, self-esteem and the motivation to learn to read decline even further. In the majority of cases, the students are deprived of the ability to learn about literature, science, mathematics, history, and social studies because they cannot read grade-level textbooks. Consider that by middle school, children who read well read at least 10,000,000 words during the school year. On the other hand, children with reading difficulties read less than 100,000 words during the same period. Poor readers lag far behind in vocabulary development and in the acquisition of strategies for understanding what they read, and they frequently avoid reading and other assignments that require reading. By high school, the potential of these students to enter college has decreased substantially. Students who have stayed in school long enough to reach high school tell us they hate to read because it is so difficult and it makes them feel "dumb." As a high school junior in one of our studies remarked, "I would rather have a root canal than read."

It is important to note that this state of educational affairs describes an extraordinary and unacceptable number of children. According to the National Center for Educational Statistics (1998), 38 percent of fourth graders nationally cannot read at a basic level--that is, they cannot read and understand a short paragraph of the type one would find in a simple children's book. Unfortunately, reading failure is disproportionately prevalent among children living in poverty. Indeed, in many low income urban school districts the percentage of students in the fourth grade who cannot read at basic level approaches 70 percent.

The educational and public health consequences of this level of reading failure are dire. Of the ten to 15 percent of children who will eventually drop out of school, over 75% will report difficulties learning to read. Likewise, only two percent of students receiving special or compensatory education for difficulties learning to read will complete a four-year college program. Surveys of adolescents and young adults with criminal records indicate that at least half have reading difficulties, and in some states the size of prisons a decade in the future is predicted by fourth grade reading failure rates. Approximately half of children and adolescents with a history of substance abuse have reading problems. It goes without saying that failure to learn to read places children's futures and lives at risk for highly deleterious outcomes. It is for this reason that the NICHD considers reading failure to reflect a national public health problem.

How Reading Develops, And Why So Many Of Our Children Have Difficulty Learning To Read

Converging scientific evidence obtained from studies supported by NICHD, the Office of Educational Research and Improvement (OERI) and the Office of Special Education Programs (OSEP) of the Department of Education, and the National Science Foundation (NSF), indicates 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 oral language and literacy experiences from birth onward appear to have an edge when it comes to vocabulary development,

developing a general awareness of print and literacy concepts, and the goals of reading. If children are read to from their earliest days, they become exposed, in interesting and entertaining ways, to the sounds of our language. Oral language and literacy interactions open the doors to the concepts of rhyming and alliteration, and to word and language play that serves to begin to build the foundation for the development of phonemic awareness--the critical understanding that the syllables and words that are spoken are made up of small segments of sound (phonemes). Vocabulary and oral comprehension abilities are facilitated substantially by rich oral language interactions with adults that might occur spontaneously in conversations and in shared picture book reading.

However, the experiences that help develop vocabulary and general language and conceptual skills in preschoolers are different from the experiences that develop specific types of knowledge necessary to read, including knowledge about print, phonemic awareness, and spelling. These skills need to be explicitly taught. Preschool children who can recognize and discriminate letters of the alphabet are typically from homes in which materials such as magnetized letters and alphabet name books are present and are the source of teaching interactions with parents. Clearly these children will have less to learn when they enter kindergarten. The learning of letter names is also important because the names of many letters contain the sounds they most often represent. With this knowledge, the child is oriented to what is termed "the alphabetic principle"--a principle that explains how sounds of speech (phonemes) become associated with letters of the alphabet (phonics). It is this principle that stands at the core of learning and applying phonics skills to print. Ultimately, children's ability to comprehend what they listen to and what they read is inextricably linked to the depth of their background knowledge. Very young children who are provided opportunities to learn, think, and talk about new areas of knowledge will gain much more from the reading process.

With understanding comes the clear desire to read more and to read frequently, thus ensuring that reading practice and the development of new vocabulary takes place. Through these early interactions and the explicit instruction provided by parents, caregivers, and teachers, skilled readers learn to apply phonemic and phonics skills rapidly and accurately to the text they are reading, practice reading sufficiently to develop fluency, automaticity, and the ability to read with expression, and apply comprehension strategies to what they are reading to facilitate understanding. But it all starts early, with those initial language and literacy interactions that expose the child to the structure of our language and how print works. Unfortunately, few children who later have difficulties learning to read, and particularly children from poverty, come to kindergarten and the first grade with these advantages. We know for example, that the average middle class child is exposed to approximately 500,000 words by kindergarten; an economically disadvantaged child is exposed to half as many, at best.

In essence, children who have difficulties learning to read can be readily observed in the initial stages of their literacy development. They approach the reading of words

and text in a laborious manner, demonstrating difficulties linking sounds (phonemes) to letters and letter patterns. Their reading is hesitant and characterized by frequent starts and stops and mispronunciations. Comprehension of the material being read is usually extremely poor. Usually, it is not because he or she is not smart enough. In fact, many children who have difficulty learning to read are bright and motivated to learn to read--at least initially. Their difficulties understanding what they have read occur because it takes far too long to read words, leaving little energy for remembering and comprehending what was read. Unfortunately, the slow and inaccurate reading of words cannot be improved in any appreciable way by using the context of what is read to help pronounce the words correctly. Consequently, while the fundamental purpose of reading is to derive meaning from print, the key to comprehension starts with the rapid and accurate reading of words. In fact, difficulties in decoding unfamiliar words and learning to recognize words rapidly are at the core of most reading difficulties. These difficulties can be traced systematically to initial difficulties in understanding that the language that is heard by the ear is actually composed of smaller segments of sound (e.g., phonemic awareness). And here we come full circle--many of these early difficulties in developing phonemic awareness are due to a lack of literacy and oral language interactions with adults during infancy and early childhood. Thus, because the environments most bereft of these interactions are those characterized by poverty, the cycle continues.

Can Children With Reading Problems Overcome Their Difficulties?

Yes, the majority of children who enter kindergarten and elementary school at-risk for reading failure can learn to read at average or above levels, but only if they are identified early and provided with systematic, explicit, and intensive instruction in phonemic awareness, phonics, reading fluency, vocabulary, and reading comprehension strategies. Substantial research supported by NICHD and OERI shows clearly that without systematic, focused, and intensive interventions, the majority of children rarely "catch up". Failure to develop basic reading skills by age nine predicts a lifetime of illiteracy. Unless these children receive the appropriate instruction, over 70 percent of the children entering first grade who are at risk for reading failure will continue to have reading problems into adulthood. On the other hand, the early identification of children at-risk for reading failure coupled with the provision of comprehensive early reading interventions can reduce the percentage of children reading below the basic level in the fourth grade (e.g., 38 percent) to six percent or less.

Are Certain Early Intervention Approaches More Effective Than Others?

Yes. On the basis of a thorough evidence-based review of the reading research literature that met rigorous scientific standards, the National Reading Panel (NRP), convened by the NICHD and the Department of Education, found that intervention programs that provided systematic and explicit instruction in phonemic awareness, phonics, guided repeated reading to improve reading fluency, and direct instruction in vocabulary and reading comprehension strategies were significantly more effective than approaches that were less explicit and less focused on the reading

skills to be taught (e.g., approaches that emphasize incidental learning of basic reading skills). The NRP found that children as young as four years of age benefited from instruction in phonemic awareness and the alphabetic principle when the instruction was presented in an interesting and entertaining, albeit systematic manner. Likewise, the National Center for Educational Statistics recently reported data from its Early Childhood Longitudinal Study involving 22,000 children showing that, after controlling for family income, youngsters who attended more academically oriented preschool programs had significantly higher scores in reading, math, and general knowledge when tested in the fall of their kindergarten year than children attending less academically oriented preschools. In addition, five NICHD longitudinal early intervention studies examining the effectiveness of different early intervention approaches provided in kindergarten and first and second grades for those children most at-risk for reading difficulties strongly suggested, if implemented appropriately, such programs could reduce the number of children who fail to learn to read well below the 38 percent rate currently observed nationally. It is also important to note that the majority of children composing this unacceptably large group of poor readers ARE NOT provided special education services, as is discussed next.

Will Proper Reading Instruction Reduce the Need for Special Education?

Yes. But it is important to understand at the outset that the number of children with reading difficulties served in special education reflects only a fraction of the number of school age children who fail to learn to read. Recall from the previous discussion that 38% of fourth grade students read below the basic level. Keeping in mind that the majority of these children will continue to have reading difficulties throughout their school career if they do not receive systematic and focused early intervention, we can estimate that at least 20 million school age children suffer from reading failure. Among these 20 million children, only approximately 2.3 million school-age children are served in special education under the category of learning disabilities (LD). The remaining 17.7 million poor readers not meeting the eligibility requirements for the LD category are either provided some form of compensatory education or overlooked all together.

We have taken care in our NICHD early intervention and prevention studies to identify ALL children who are at-risk for reading failure within a given sample and to identify the instructional approaches that are the most effective for the majority of these students, irrespective of whether they are eligible for special education as an LD student or eligible for compensatory education services. As noted earlier, these studies have indicated that with the proper early instruction, the national prevalence of reading failure can be reduced significantly. Thus, by putting in place well designed evidence-based early identification, prevention, and early intervention programs in our public schools, our data strongly show that the 20 million children today suffering from reading failure could be reduced by approximately two-thirds. While still a totally unacceptable rate of reading failure, such a reduction would allow us to provide services to the children who are in genuine need of special education services with substantially greater focus and intensity. Thus, not only can the

President's proposal lead to tremendous savings in human capital, but the cost savings will also be significant - savings that can be applied to other pressing educational issues within States and local districts.

How the President's Early Reading First and the Reading First Educational Initiatives Build On The Most Trustworthy Scientific Evidence Available

President Bush has proposed a major reading initiative to: (1) provide assistance to States and local educational agencies in supporting local efforts to enhance the school readiness of children ages three through five, particularly those from low-income families, through scientific evidence-based strategies and professional development designed to enhance the development of verbal skills, phonemic awareness, pre-reading and basic reading skills, and early language development necessary for optimal reading development in kindergarten and beyond (Early Reading First); and (2) to provide assistance to States and local educational agencies in establishing scientific research-based reading programs for all children in kindergarten through grade three and the necessary professional development and other support to ensure that teachers can identify children at-risk for reading failure and provide the most effective early instruction to overcome specific barriers to robust reading development (Reading First).

The President's reading initiatives have been developed on the basis of the best scientific evidence and knowledge relevant to reading development, reading difficulties, and reading instruction currently available. The initiatives are also noteworthy for the attention given to (a) the early identification of children at-risk for reading failure; (b) the development and implementation of evidence-based prevention and early reading intervention programs at the local level; (c) the critical need to provide support to States to ensure that schools and teachers have the necessary professional development to identify and/or develop the most effective instructional materials, programs, and strategies; (d) the critical need to provide support to States and local educational agencies to identify and/or develop the most reliable and valid screening and diagnostic reading assessment instruments that can be used to identify at-risk children and to document the effectiveness of the instructional materials, programs, and strategies; and (e) the need to strengthen coordination among schools, early literacy programs, and family literacy programs, and to ensure that these programs use evidence-based materials, instructional interventions, and strategies.

Of particular importance within the President's reading initiatives is the requirement that funding for State and local educational agency Early Reading First and Reading First programs is contingent upon objective and rigorous peer review of the grant applications that are submitted. Equally important, the President has stressed the need for States and local educational agencies to monitor and assess funded programs to ensure continued progress and accomplishment of stated objectives for student reading achievement. This review and monitoring process is critical to the development and continuous improvement of these reading programs, and serves an

essential capacity-building function by providing extensive feedback to the States and local educational agencies via systematic and objective summaries that serve to hone and elevate the quality of the programs.

In essence, the President's reading initiatives are designed to provide the critical early identification and early reading interventions necessary to prevent reading failure among our Nation's children and to ensure that all children are skilled readers by the end of the third grade. His Reading First and Early Reading First proposals require that participating States and local educational agencies identify and/or develop and implement the necessary screening, assessment, reading intervention approaches, and program evaluation systems on the basis of the highest quality scientific research available. The President's proposals also provide resources for professional development and technical assistance to ensure States and local educational agencies develop the capacity necessary to accomplish this implementation and systematically evaluate the effectiveness of the programmatic efforts. In short, his proposals are predicated on a science of reading development and reading instruction, rigorous peer review and monitoring to ensure high quality program design and implementation, the provision of technical assistance when indicated by peer review, and the systematic assessment of clear and measurable achievement goals to ensure accountability.

The Issue of Assessment

The President's proposed reading programs recognize both the importance of assessment and the fact that assessments have multiple purposes, including early identification, diagnosis, program evaluation, and accountability. A single test cannot address all these purposes. For example, a so-called "high-stakes" test can be useful for accountability purposes, but does not provide teachers the information they need to plan instruction, particularly in kindergarten through the second grade. Consistent with the NRC report on high stakes testing, accountability is hard to assess before Grade 3, but if schools and teachers are doing a good job, this should be reflected in accountability assessments in Grade 3.

Let me review four purposes of assessments and how they line up with different types of assessments.

1. Early identification - NICHD researchers routinely screen large numbers of children to identify those most in need of systematic, focused, and intensive early instruction. Administration of these screening instruments does not require a great deal of time, but it does a good job of informing teachers and schools about those children who are most at risk for subsequent literacy problems. Screening is not diagnostic. That is, it does not provide the teacher with a detailed indication of the child's specific reading problems and needs, but it can certainly save resources that would have to be provided later by identifying those children at greatest need for immediate intervention.
2. Diagnosis - Identifying instructional needs, which is the purpose of diagnosis, helps the teacher plan instruction. It is closely linked to early identification, as

extensive instructional planning is not necessary for every child. Therefore, teachers have more time for instruction by identifying those students most in need. Neither screening for early identification nor diagnostic assessment provides detailed information about how well a program is working or whether a teacher is providing proper instruction. Teachers need better tools for making educational decisions in light of students' performance on these "progress monitoring" assessments. If one seeks to meet the goal of "leaving no child behind," then teachers must know at the earliest possible moment that a student is falling behind, and at the same time, must know how to intervene to prevent the student from falling further behind. The assessment of risk status and educational progress in young children is frequently ignored on the premise that early educational progress is driven largely by maturational factors which dissipate with time, such that differences observed early in development will disappear with age. We know, however, that children do not outgrow reading problems. This attitude toward assessment and early systematic and focused intervention and prevention efforts produces devastating consequences for many young children, particularly children from poverty.

3. Program Evaluation - States and local educational agencies need to know whether programs introduced in their local schools are effective. Within this context, norm-referenced tests can play a critical role, particularly if they are incorporated within research designs that will support inferences relevant to the specific effects of the intervention or program on student achievement. Norm-referenced tests assess transfer of learning. They essentially rank children within their grade level on how well they read. An assessment designed to rank individuals will not generally be effective for diagnosing problems, or providing prescriptive information to inform and guide instructional practices and the specific focus of an intervention. However, such norm-referenced assessments can help determine the "value-added" contribution of specific instructional programs and/or strategies by assessing whether we achieve the ultimate purpose of the reading programs, which is to literally alter the distribution of reading skills in our country and improve the reading of every child.
4. Accountability - States and local educational agencies may consider developing assessments that assess mastery of the educational content they deem critical to their academic, economic, and civic success. This type of assessment is usually done through mastery assessments, also known as criterion-referenced tests. Effective assessment in this domain demands clarity in the specification of educational objectives, both with regard to the content to be learned and the skills to be acquired, and the ways in which students must be able to demonstrate content and skill mastery. However, an assessment designed to evaluate mastery of key skills will not generally be effective for distinguishing between students whose performance exceeds a criterion and those who fall short of the mark. As noted earlier, norm-referenced assessments perform this task. Similarly, a norm-referenced assessment that ranks children doesn't address whether teachers are

teaching effectively and whether children are mastering what the State and/or the local educational agency deems important. Such assessments should be done yearly beginning in Grade 3 so that we know how well our schools are performing. It is important to keep in mind that mobility rates are very high in inner-city schools, and this degree of mobility must be taken into account when analyzing the results of the assessments. It is also important to keep in mind the concern that this type of assessment leads to schools interpreting accountability as mandating a need for "teaching to the test." In fact, if the standards are good, the curriculum designed to achieve the standards is rich and comprehensive, and the test assesses the standards, this should not be a problem. It certainly is a problem if the test does not assess the standards or results in a narrowing of the curriculum. But that reflects decisions about accountability that should not condemn its importance or the assessment itself - just how it is implemented. And these decisions to teach to a test usually occur at the building level.

The President's reading initiatives ensure that locally determined and implemented programs for the assessment and evaluation of programmatic effectiveness are at the core of this critical program. Indeed, the success of this comprehensive early reading program depends on our knowing what works and what is ineffective, and modifying our efforts as quickly as possible when the latter is identified.

This is a time of great opportunity for the Federal and state governments, local educational agencies, teachers, and parents to work together toward the common objective of eliminating the reading deficit in America. Through scientific inquiry, we have identified the elements of an optimal reading program. We know how to measure a child's progress toward reading with fluency and comprehension. We know how to assist teachers in acquiring the skills necessary to teach reading effectively. We know how to reach the most vulnerable children in our nation with the essential skills they need to learn to read. All that remains now is to apply what we have learned in America's classrooms.

Thank you, Mr. Chairman, for the opportunity to testify on these important topics. I am happy to provide the Subcommittee with references for the research cited in my statement, and will be pleased to respond to any questions you and the members of the Subcommittee may have.

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