

To End Reading Failure in America's Schools

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Abstract

The United States continues to invest incredible amounts of resources into a methodology of reading instruction that has proven to be largely ineffective for decades. It is only through the use of technology that we can provide students the opportunity to learn at their own pace through customized, "branching" instructional content. We must bring about a paradigm shift in reading instruction and embrace the teaching methodologies that leverage cost-effective classroom technologies, which have proven to be effective in the professional world to consistently improve performance.

1. America's Profound But Needless Reading Acquisition Crisis

In 1955, Rudolf Flesch published a blockbuster best seller entitled, "Why Johnny Can't Read," in which he asserted that American educators were botching the job of teaching the nation's youth how to read. He insisted that the teaching techniques in our schools were all wrong and that our children can learn to become proficient readers if correctly taught. In 1981, he published the sequel, "Why Johnny Still Can't Read: A New Look at the Scandal of Our Schools." In it, he maintained that the culprit in the literacy disgrace was the "look and say" teaching method, which we now call "whole language."

The 2007 national reading scores show continued, massive reading failure in America's schools. I believe that Flesch's argument still holds true, 28 years after his follow-up thesis. We remain focused on ineffective methods and we ignore the technology-based solutions that are readily available to help address instructional gaps. These technology-based programs are relatively low-cost solutions that will save our schools and communities billions of dollars annually, and end our children's reading failure and alleviate the deep sense of frustration experienced by our students and their teachers.

Given the availability of more effective solutions, there simply is no excuse for reading failure to continue. We have the tools and ability to implement instructional methods to quickly show our students that reading acquisition is no more challenging than learning to ride a bike - although affecting a paradigm shift in reading instruction will prove to be far more challenging.

2. Chronic Struggles to Reach Proficiency

The Nation's Report Card: Reading 2007 (Lee, Grigg & Donahue, 2007) illustrates that our nation is experiencing a profound reading crisis (Table 1). The data show that 33% of our nation's fourth-grade students do not read even at the basic level, and almost 67% of students do not read at the proficient level.

According to the U.S. Department of Education's NAEP Web site (<http://nces.ed.gov/nationsreportcard/reading/>), fourth-grade students below the reading proficiency level are unable to derive inferential or literal information from text, and cannot draw conclusions based upon written material. Those below basic reading ability are unable to demonstrate an understanding of the overall meaning of what they read, or make relatively obvious connections between the text and their own experiences.

Table 1.
Nation Report Card: Reading 2007 (Lee, Grigg & Donahue, 2007)

	Below basic	Below Proficient
African American		
4 th grade	54%	86%
8 th grade	45%	87%
12 th grade	46%	84%
Hispanic		
4 th grade	50%	83%
8 th grade	42%	85%
12 th grade	39%	78%
Native American		
4 th grade	51%	82%
8 th grade	44%	82%
12 th grade	n/a	n/a
Asian/Pacific Islander		
4 th grade	23%	54%
8 th grade	20%	59%
12 th grade	27%	65%
White		
4 th grade	22%	57%
8 th grade	16%	60%
12 th grade	21%	58%

Note: The fourth- and eighth-grade data is from the NAEP 2007 report -

<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2007496>

Twelfth-grade data is from the NAEP 2002 report -

<http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2003521>

In addition to the disheartening data on student achievement, the lack of NAEP data on student performance in pre-K through grade three illustrates an even greater omission in our nation's educational strategy. As most reading experts agree, the development of foundational reading skills needs to begin during the pre-K to grade-three period to avoid the reading failures experienced in grades four through 12; problems that are well known to be difficult - if not impossible - to reverse. Failure to track performance data at the end of this crucial window of instruction suggests that our educational leaders have not only erred in their instructional strategies, but have also erred in their efforts to effectively monitor academic progress during the critical, formative years of our students' academic growth.

Despite the recent focus on improving reading performance by investing in staff development and scientifically-based curricula, the national reading scores have shown little improvement from the initial benchmark in 1992 to the 2007 assessment. The percentage of fourth-graders performing at or above basic achievement levels improved from 62% in 1992 to 67% in 2007. The percent at or above proficient levels increased from 29% to 33% over the same period. The percentage of eighth-graders performing at or above basic achievement levels improved from 69% in 1992 to 70% in 2007. There was no significant change in eighth-graders reading at or above proficient levels.

Our investments in education have increased, but improvements in performance have not kept pace, nor have these improvements brought students to acceptable levels in reading achievement. Simply throwing more money at the same old "scientifically proven" instructional materials has only proven to be not sufficiently effective. We must realize that while materials may be scientifically proven, it is the methodology of reading instruction that is going to bring us to the level of achievement we desire.

Using technology as a disruptive force to approach the challenge from a new angle has proven effective. Recent reports in *Reading Psychology: An International Quarterly* address the feasibility of using technology-based solutions to greatly improve reading scores at all grades and capability levels, while reducing the educational costs associated with current teaching practices.

3. Understanding Reading Acquisition Failure: The Hidden Dimensions of Reading Acquisition

3.1 The Pedagogy of Reading

To understand how technology can help, first, let us briefly examine the science behind reading skills development. The English language is composed of 44 sounds represented

by a code of 150 letter combinations. Young children must begin mastering this code in a systematic and timely manner. Decoding skills enable children to process printed materials, access knowledge embedded in printed materials, facilitate their uses of language, and grow their intellects. Because of this cumulative effect of reading development, failure to master decoding skills in a timely and orderly fashion can lead to reading failure and diminished learning development in all subject areas.

With that, it is logical to assume that in terms of reading development, each new skill developed is dependent on the mastery of the previous foundational skill. Once you master skill A, you move on to skill B and only after this skill is mastered, do you move on to skill C.

In *Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns*, Christensen, Horn, and Johnson (2008) give a real-world example of this concept in action. Christensen et al. cite the research of Professor Steven Spear, who helped define the parallels of monolithic education in our public schools with auto assembly lines at Chrysler and Toyota.

In their assembly line job training, autoworkers at the Chrysler plant were given a fixed amount of time to master a multi-step seat assembly process. However, workers at the Toyota plant were given an almost unlimited amount of time to learn a multi-step seat installation. The difference: Toyota taught workers one step at a time; permitting each worker to progress to step two only after demonstrating mastery of step one. This deliberate and iterative process may result in much longer training time, however, the skill of the worker and the quality of the car were markedly improved.

As Christensen, Horn, and Johnson (2008) conclude, Chrysler's method of a fixed training time produced results that were similar to public schools by being irregular and surprising. At the Toyota plant the training time was variable, but the assessment was interdependently woven into the content delivery, with a result that was stable as trainees could reasonably be predicted as to what skills had been learned.

This begs the question, would you rather have an educational system where variable instructional time is based on sequential and cumulative skill development yielding a fixed, high-quality result; or would you prefer a fixed period of time for instruction and a result that is variable and unpredictable? Clearly, most people would choose the option with a consistent, high-quality result. However, with resources scarce and teacher time too limited to offer enough one-on-one instruction, technology holds the key to enabling students to progress through an iterative, cumulative process at their own pace.

3.2 The Technology of Reading Instruction

Instructional technology is currently being used by a range of schools to provide English speakers, Spanish-speaking English learners, and other ELL learners, the English reading skills beginning with phonemic awareness and English sound-symbol correspondence. These critical, foundational skills are needed to develop automatic word recognition, and are a key building block for progressing to successive skills. By incorporating automatic branching logic, these technology-based programs deliver instruction on core skills and do not let students progress to the next skill without first achieving the automaticity that assures the systematic development of the neural networks that will support future automatic word recognition. This branching ability allows each student to progress at his or her own pace, giving them the opportunity to listen to and repeat the oral instructions for each task. Teachers have access to detailed usage and skill progress reports, which provide the transparency needed for timely supportive administrative management and avoidance of student error repetition. This illustrates the overall reading progress and the learning path to successful skill acquisition.

Scientific-based and published research (Macaruso, Hook & McCabe, 2006; Macaruso & Walker, 2008; Macaruso & Rodman, 2009) affirms the efficacy of this basic reading acquisition process for most Tier I, II, and III beginning and remedial reading learners. With the most effective and rigorous programs, most students require one to two hours of program usage per week to support their reading acquisition, prevent reading failure, and remediate accumulated reading flaws in a timely and orderly way.

3.3 The Classroom Practice of Reading Instruction

This method of technology-based reading instruction suggests a paradigm shift in classroom practice so that the teachers are no longer the sole providers of reading instruction and student learning practice. Instead, the teacher introduces each skill and the context in which it is to be applied; places students in the iterative question-response technology-based reading skill development programs, monitors individual student computer usage and progress, and coaches the students as needed. In turn, the students get the practice they each need to develop their skills automatically through this process until they have mastered each of the essential reading skills.

3.4 The Economy of Reading Instruction

The blended teacher/technology mode of delivering the learning experience students require for reading acquisition is much less expensive than the conventional teacher-centric mode. The teacher provides large-group instruction, students hone their foundational reading skills, and the instructional technology program provides information for the teacher to differentiate instruction in key areas, based on student performance using the software.

The procurement and annual hosting costs of implementing a technology-based Response to Intervention (RTI) solution at the school, district, or nation-wide levels are estimated to be well below 10% of the cost of implementing conventional teacher-centric RTI approaches to the problem. A recently-published report (Jordan, 2008) regarding the Hall County Schools in Georgia showed that the district saved millions of dollars buying reading textbooks for K-8 graders by implementing a technology-based solution that students use in the classroom as well as from home.

The estimated costs to the nation of dealing with the consequences of reading acquisition failure are estimated to be in the hundreds of billions of dollars annually. Improved student reading performance through cost-effective investments in technology represent the future of public education. The dollar savings generated by timely, orderly, and school-wide reading acquisition will fund curriculum evolution, assure overall educational school mission success, and compensate technology-using teachers for their added productivity contributions.

4. Conclusion

With the availability of technology-based supplementary reading programs, there is no longer any excuse for massive reading acquisition failure in America's schools. Technology-based solutions to America's massive reading failure will narrow student learning differences, reduce remedial resource needs, ease the current calls for increased school hours and dollars, and raise overall learning achievement while lowering overall school costs. Improved student learning will raise lifetime student productivity and earning prospects, reduce the annual societal costs of massive reading failure, and otherwise improve the quality of American life.

The end of massive reading failure in America's schools can be readily and economically achieved through the combination of technology-based supplemental products and dedicated educators. Massive reading success will then usher in a golden age of learning achievement, related social advancement, and increased prosperity for all.

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Bob Lemire, the father of a child diagnosed with developmental dyslexia, founded Lexia Learning Systems in 1984 to create a reading intervention program accessible to everyone, no matter one's personal or financial resources. Today, what began as one man's attempt to help children with reading problems has turned into one of the nation's most well known and respected developers of reading software programs.