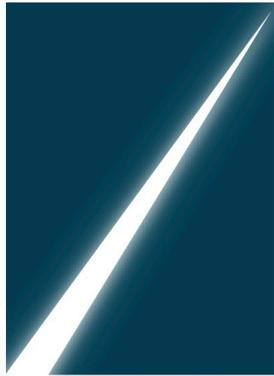


**WHAT MILTON WRIGHT KNEW
ABOUT READING INSTRUCTION, BUT
LOTS OF TEACHERS
APPARENTLY DON'T**

**A Bluegrass Institute Policy Point
by Richard G. Innes • July 2021**



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What Milton Wright knew about reading instruction, but lots of teachers apparently don't

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Forward – Problems with teaching reading go back much farther than you might think

Not long ago, I read about a letter from a grandparent named Milton Wright that discusses having to teach a grandchild to read after a public elementary school failed the boy. Wright was fuming that the school tried to teach his grandson to read by having the boy guess what the words were. The technique didn't work for this boy.

Such guessing techniques are a hallmark of many current reading programs including those built around the so-called Three Cuing System, where students are taught to “Guess the words based on context.”¹ At best, this approach is very controversial.

First things first. Who was Milton Wright, anyway?

Milton Wright had a background in teaching and in ministry, but, unless you are a victim of the content-poor history currently being taught in public schools, you will probably place him best when I tell you that two of his sons were named Orville and Wilbur.

That's right, Milton's sons invented the airplane. And, while I recently read about it, Milton didn't recently write his letter. It was dated January 7, 1916 – more than a century ago (Read more about Milton and his two famous sons in “The Bishop's Boys,” a really good book by Tom Crouch.² Comments about Milton's letter start on Page 30).

But, the main message here is that more than a century ago, teacher Milton Wright already knew that some of the methods many of today's teachers use to teach reading are wrong!

But ed schools and the teachers they train haven't been listening

Wright offers only one fairly early example of the disputes over teaching reading. There are plenty of others, some stretching back even farther.

For example, Martin Cothran points out in “This History of Phonics”³ that misdirected reading instruction was well under way in many American schools by the mid-1800s.

The controversy over reading instruction has continued ever since.

Cothran also points to Rudolf Flesch's 1955 book, “Why Johnny Can't Read.”

Flesch severely criticized the then-popular Whole Language approach to teaching reading that tried to treat English as a hieroglyphic language like ancient Egyptian. That just doesn't work well for an alphabetically based language like English.

But ed school profs and the teachers they trained were not paying attention. Use of Whole Language continued long after Flesch wrote his book. All the while, educators were just convinced they were right.

So problematic reading instruction methods continued in use.

In fact, nearly four decades after Flesch was asking about Johnny's poor reading skills, the Kentucky Department of Education (KDE) issued its first edition of "Transformations: Kentucky's Curriculum Framework" in 1993 in print form only, making a slightly later 1995 edition available online.⁴ A section in Volume 2 in Transformations (beginning on Page 133 in both the 1993 and 1995 versions) is devoted to pushing Whole Language.

More recently, Whole Language approaches still live on, having now been merged into what is called "Balanced Literacy," which is nothing more than bad techniques for teaching reading being added to other more successful programs in a way that is claimed to be "balanced" but that messes up the efficacy of all the approaches.

Where's the research?

Supporters of Whole Language claimed they had "research that shows" their methods worked, but the truth was their research was poor quality and had been contested since at least the days of Milton Wright.

Also, there is no lack of research pointing the other way. And, the counter research has gotten much stronger in the past 30 years.

One fairly modern example of research countering the claims of the Whole Language crowd is an interesting and readable 1997 paper by Bonita Grossen on the subject, "30 Years of Research: What We Now Know about How Children Learn To Read."⁵

Grossen's paper focuses on research about reading conducted not by Education School professors but by the strongly science-based National Institute of Child Health and Human Development (NICHD).

The NICHD research about reading used some high-tech approaches to generate images of activity occurring inside human brains as people were trying to read. First based on Positron Emission Technology, and later on functional MRI techniques, these NICHD brain imaging studies show some remarkable things.

It turns out that weak readers generally try to use an area in the right part of their brains while trying to read while strong readers generally use several very different areas in the left side of their brains while reading.⁶ What's more, the left-brain activity requires development of coordination of those separate brain areas to process reading quickly and accurately. That requires practice, something Whole Language didn't like.

The NICHD research also established that dyslexia is a real and detectable problem, not something imaginary as many teachers believed in the mid-1990s and, according to sources like cognitive psychologist Daniel Willingham, some teachers apparently still believe today.⁷

In sharp contrast to much of the ed-school-based research on reading, the NICHD effort was heavy-duty science conducted by real scientists and medical professionals. This work was of much different quality and far more sophisticated than the poorly crafted (if not outright biased) research coming from ed school profs who were pushing Whole Language (Note: Grossen touches upon the subject of problems with such research in her paper).

By the way, follow-on NICHD-sponsored research pointed the way to something else as Eunice Kennedy Shriver wrote in 2004.⁸ When poor readers were given intensive instruction with phonemic awareness and phonics, they started to read much more strongly. Even more important, Shriver reported that students who got this intensive phonics-type program were examined using functional MRI techniques to examine brain activity. That fMRI research showed these formerly weak readers who had been using the less efficient right side of their brains for reading started to generate the desired left-brain reading activity for reading once they got good training about phonemic relationships in words and the related phonics that tied those sounds to letter combinations.

Basically, teaching reading properly in the first place by starting students out with a strong phonics-based approach could have eliminated some of the problems these students encountered thanks to Whole-Language inspired, misdirected instructional approaches.

Wright was right!

Things Milton Wright believed about reading instruction in 1916 have been strongly and scientifically confirmed in later research such as that summarized in Grossen's paper and conducted using fMRI techniques.

Phonemic awareness, explicitly teaching sound-spelling correspondences, and starting kids out reading by using only texts they have been given all the necessary phonetical keys to decode are key points.

Also, practice is required to develop the hand-shaking required by those different areas in the left side of the brain that strong readers use. The Whole Language people who talked about "drill and kill" with reading were wrong. Drill actually is essential to develop reading skill. But, the process has to start out right, with a strong and well-structured introduction to phonics and phonemic awareness.

Using interesting stories to develop better comprehension and vocabulary is also important, but for beginning readers these stories must be read by the teacher until the students master all the sound-letter combinations required to decode all the words. Pushing students to read with Whole Language approaches before those students have developed decoding skills is counter-productive. Guessing at word meaning, perhaps using pictures in the book and teaching sight words just encourage right brain reading.

Throughout, the teacher must be a sage on the stage, not a guide on the side as many of our current educators unfortunately think is the right way to go. But many ed school profs and the teachers they trained continued to believe in Whole Language-type instruction; thus the reading wars continued.

Congress wanted the truth

By the turn of this century, the reading problem was so obvious that Congress commissioned a National Reading Panel to investigate what was really understood about reading.

Congress charged the reading panel to use only results from rigorous, scientifically-constructed research to complete their work and develop recommendations. Research that didn't meet at least minimal requirements for rigor was to be avoided. Congress understood that research without rigor would not provide valid answers about what really works for teaching reading.

The full final National Reading Panel Report, including the reports of subcommittees, runs 499 pages and came out in 2000.⁹ However, a much more compact, 33-page "small" report¹⁰ is also available.

A few key findings as listed in the panel’s small report include:

- **Instruction in phonemic awareness (PA)** (was key and) **involves teaching children to focus on and manipulate phonemes in spoken syllables and words.**
- **Systematic phonics instruction enhances children’s success in learning to read and that systematic phonics instruction is significantly more effective than instruction that teaches little or no phonics.**
- **Reading practice is generally recognized as an important contributor to fluency.** (So, it really is drill to create skill, not “drill and kill” as many teachers have been taught over the years).

But, even after this very thorough report was released, teachers and ed school profs still resisted.

Thus, despite the findings of the National Reading Panel, elements of Whole Language Reading, now repackaged and renamed such things as the “Three-Cueing System” or “Balanced Literacy,” continue to be featured in many classrooms today.

The “research” really does obscure the truth

An interesting message lurks in some of the statistics found in the National Reading Panel’s report. The report located a very large number of studies on reading. However, the reporters found in general that only very small percentages of the studies met even minimal requirements for scientific rigor.

Table 1 summarizes some of those statistics about the reports the National Reading Panel examined for various areas related to reading instruction, showing how few of those reports met at least minimal requirements for rigor.

Table 1

Report Usability for the Topic Areas Examined by the National Reading Panel			
Specific Topic Area of Research	Reports Found With Initial Search	Reports with Adequate Scientific Rigor	Percentage, Reports with Adequate Rigor
Phonemic Awareness	1,962	52	2.7%
Phonics Instruction	1,373	38	2.8%
Guided Oral Reading	364	16	4.4%
Vocabulary Instruction	20,000 (Plus)	50	0.25% (At Best)
Text Comprehension	481	205	42.6%
Teacher Preparation/ Comprehension Strategies	635	4	0.63%
Teacher Education and Reading Instruction	300 (Plus)	32 (But insufficient for optimum use)	10.7% (At Best)

Clearly, a huge percentage of reports about reading instruction that have been created over the years suffers from notable quality problems. Such problems mean the conclusions in those reports cannot be safely considered justified. In fact, due to flaws in methodology, the conclusions in some cases, as Grossen points out in her paper, could be just flat wrong.

Unfortunately, this massive collection of inadequate – if not outright flawed – research on reading has created a huge smoke screen around the truth. Thanks to that “research” smoke screen, dubious studies have driven the ideology and content of many teacher preparation programs for the past century and continue to do so today. Reading instruction in many American classrooms has suffered accordingly.

The wrong stuff about reading still often dominates US classrooms

Even today – more than two decades after the release of the report from the National Reading Panel and nearly two decades after the fMRI studies began to appear – a lot of teacher education programs and the teachers they train still don’t cover what Wright, Flesh, Grossen and the National Reading Panel knew was best for reading instruction.

Just last year, disturbing evidence about the quality of reading instruction – including right here in Kentucky – came out in a report from the National Council on Teacher Quality (NCTQ) titled “Teacher Prep Review, Program Performance in Early Reading Instruction 2020.”¹¹ The NCTQ report examines teacher preparation programs across the nation, looking for how well the five components of strong reading programs were actually covered at each university. Those five components are:

- (1) **Phonemic Awareness:** Developing student awareness of the sounds made by spoken words;
- (2) **Phonics:** Systematically mapping those speech sounds onto letters and letter combinations;
- (3) **Fluency:** Giving students extended practice with reading so that they learn to read without a lot of effort (which critically allows students to devote their mental energy to the meaning of the text instead of struggling with word decoding);
- (4) **Building Vocabulary:** A skill closely associated with the final component;
- (5) **Comprehension:** Developing students’ understanding of what at first is being read to them and eventually what they will read themselves.

Page 11 of the NCTQ report indicates that, on average, Kentucky’s college-based teacher preparation programs only cover three of the five essential elements for good reading instruction outlined by the National Reading Panel. So, on average, Kentucky’s new teachers are only getting about 60% of what they need to teach reading well.

Some Kentucky colleges do have solid reading programs according to the NCTQ, but not one Kentucky university is cited in the council’s report for having either “Exemplary undergraduate programs” or “Consistently high-performing undergraduate programs” or “Consistently high-performing graduate programs.”

While five Kentucky universities earned an “A” rating from the NCTQ for their instruction on how to teach reading and eight earned a “B,” at the other end of the scale, nine Kentucky college programs for prospective reading teachers earned either a “D” or an “F.”

Paradoxically, the University of Kentucky got an “A” for its reading preparation for teachers from the NCTQ but the University of Louisville’s programs for both undergraduate and graduate school training earned an “F.”¹²

Further evidence of problems with the training of teachers to instruct reading is evident in the quality of many textbooks used in those college programs. The NCTQ report says:

“Among the 725 textbooks required by programs reviewed in this edition, 40 percent are inadequate for the purposes of teaching the science of reading.”

Even worse, the NCTQ report continues:

“Many texts still hold onto unproven practices, including...strategies for word solving. Some still include long-discredited three cuing systems for decoding, or promote the use of ‘cloze reading’ to teach students to guess words that would fit.

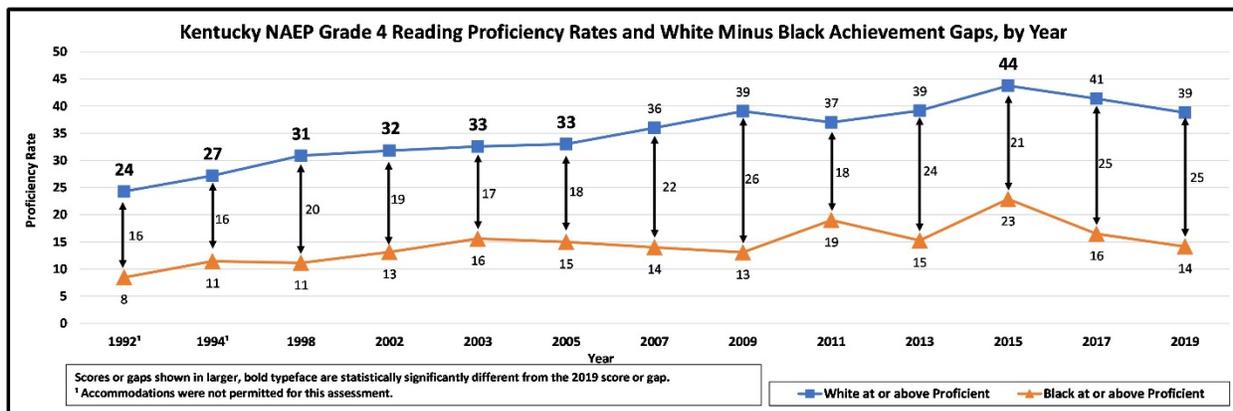
Note: “Cloze Reading” is basically having students guess about words omitted from the text, something Milton Wright and others mentioned above would dislike.

So, teaching incomplete, if not outright wrong, ways to do reading instruction is still very much present in many college programs in the US, and, as the NCTQ indicates, this apparently includes too many programs right here in Kentucky.

Poor reading instruction has consequences

The Bluegrass State’s children demonstrate the folly in the current reading instruction situation every time they take another National Assessment of Educational Progress (NAEP) in reading. Figure 1 was assembled using the NAEP Data Explorer online web tool¹³ and shows Kentucky’s NAEP Grade 4 Reading proficiency rates as of 2019 are stunningly disappointing despite nearly three decades of education reform.

Figure 1



Worse, in the two most recent NAEP Reading Assessments, Kentucky’s Grade 4 proficiency rates have also been in decline.

While the situation is highly disappointing for Kentucky’s white students, it’s a tragedy for the state’s Black students. The NAEP tells us that as of 2019, 86% of Kentucky’s Black students cannot read proficiently.

In fact, Kentucky's Black students' reading proficiency as of 2019 is not statistically significantly any different from this group's proficiency rate way back in 1992! **Essentially, the state's Black students remain at an extremely low level, having demonstrated no detectable progress in NAEP Grade 4 Reading in nearly three decades!**

Of course, such poor performance can only be expected when Kentucky's schools of education refuse to look at and learn from a century of research that continues to confirm what Milton Wright knew in 1916.

What's being done?

Actually, some very interesting things are happening in reading instruction – just not here in Kentucky.

Perhaps the most exciting news comes from Mississippi.¹⁴ In 2013, fed up with being considered to have the absolute worst public education program in the country, the Mississippi legislature passed a bill to start really addressing the problem. One feature of the bill required that all instruction in reading would mesh with the science discussed in the National Reading Panel's report and other quality research.

In 2015, Mississippi started a program using specially trained individuals to go out to every elementary school in the state to ensure every teacher knows about what the science shows and how to teach reading accordingly.

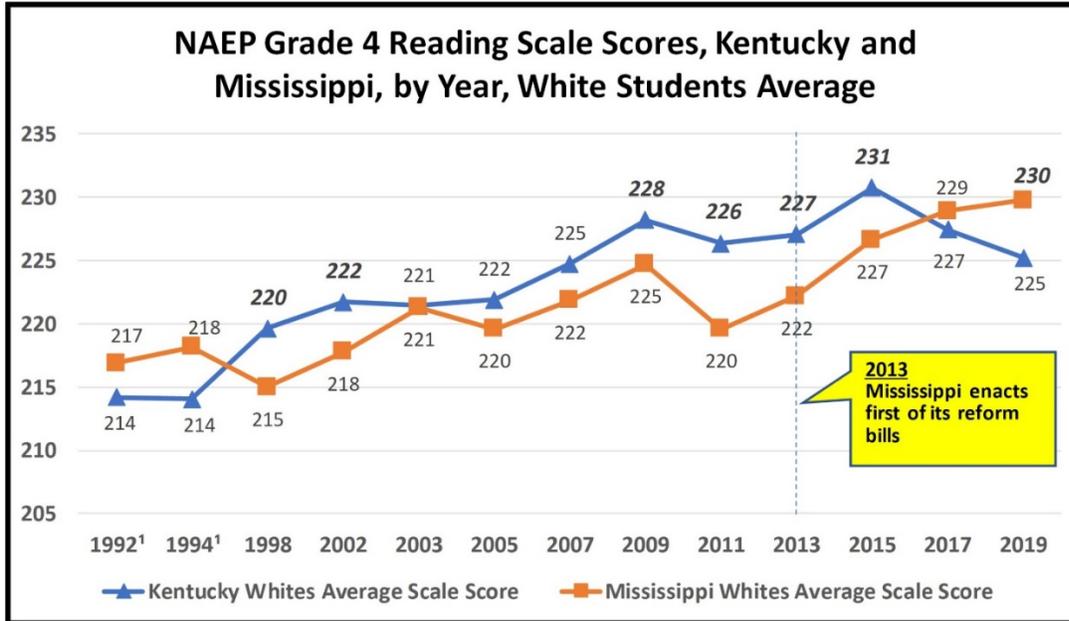
By 2019, the Mississippi system had amazing evidence it was starting to work!

In the 2019 NAEP Grade 4 Reading Assessment, Mississippi was the only state to show improvement. All other states either stayed flat in reading or showed an actual decline.

For example, as shown in Figure 2, Mississippi's white students' overall NAEP Scale Score improved by three points between 2015 and 2019. In the same interval, Kentucky's overall average score for whites declined six points, a statistically significant drop. As a consequence, the five-point difference in Kentucky's and Mississippi's white student scores on the 2019 NAEP Grade 4 Reading Assessment is also statistically significant.

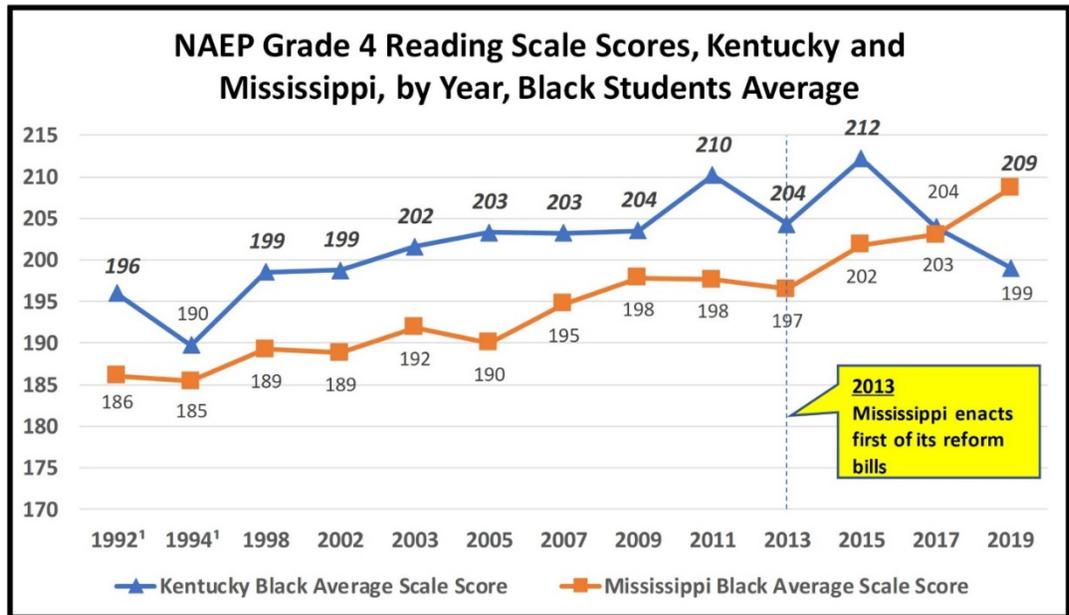
Mississippi's white students, who used to trail Kentucky's on NAEP Grade 4 Reading, now outperform their counterparts in the Bluegrass State and the trajectories of the lines on the graph indicate this will move further in Mississippi's favor going forward.

Figure 2



For Black students in Mississippi, the roll is an even more remarkable story as Figure 3 shows. Once scoring well behind Black students in Kentucky, Mississippi’s Blacks now outscore Kentucky’s, and as with the case with white students, the difference is statistically significant. Beyond that, the story is also just remarkable.

Figure 3



On the other hand, the huge, 13-point score decline between 2015 and 2019 for Kentucky’s Black students in NAEP Grade 4 Reading creates major cause for concern.

Will Kentucky ever fix this problem?

While Mississippi offers hope that doing the right thing with reading really can help children, until Kentucky finally comes to grips with the obviously ineffective way too many of its teachers currently conduct reading instruction and does something about it, things are unlikely to change in the Bluegrass State.

Some are trying

To be sure, some in Kentucky recognize the challenge and are trying to address this major education problem.

A literacy improvement bill (SB 115)¹⁵ filed by Sen. Stephen West, R-Paris, during the 2021 Regular Legislative Session would have created a program in Kentucky similar to what's already being done in Mississippi, ensuring the science of reading occurs in every classroom.

West's bill cleared the Kentucky Senate with a very strong, 31-2 vote but died in the Kentucky House without even getting a hearing.

Teachers' interests ahead of children's needs

Why did SB-115 fail? Multiple sources advise that opposition to SB-115 came mostly from a small group of remedial reading instructors in Kentucky's Read to Achieve (RTA) program. These RTA teachers were afraid they would lose their positions if SB 115 passed. But, was this the right priority?

Some observations about Read to Achieve (RTA)

RTA's 300 teachers overall are only providing expensive remedial reading instruction for about 10,000 Kindergarten through third grade students each year.¹⁶

For some perspective, 2019 KPREP testing reveals a total of 692 schools got third grade scores for reading,¹⁷ so at least that many different elementary schools are found in the state. Thus, RTA serves less than half of this group of schools.

But, RTA issues run deeper

The KDE advises that "RTA teachers are not required, at this time, to be trained in the science of reading."¹⁸ Obviously, such untrained teachers cannot provide training to other teachers in the school about the science of reading, either.

Are they even using the right programs?

The Kentucky Read to Achieve Program Yearly Evaluation Report for 2018-19¹⁹ lists several intervention programs being used in Table 18 on Page 45. At least two of those programs, Reading Recovery and the Leveled Literacy Intervention, are now controversial.

For example, on Dec. 3, 2019, Education Week reporter Sarah Schwartz wrote in an article titled "The Most Popular Reading Programs Aren't Backed by Science"²⁰ that regarding Leveled Literacy Intervention and Reading Recovery:

"An Education Week analysis of the materials found many instances in which these programs diverge from evidence-based practices for teaching reading or supporting struggling students."

So, not only is there apparently no clear mandate for RTA teachers to know and use the science of reading, but it appears in several cases they are using programs that are not following the latest evidence about what works best.

The Read to Achieve program was established by 2005 legislation and was up and running well before the 2019 NAEP came along.²¹ Furthermore, RTA only serves students in Kindergarten through third grade. This is problematic because the NAEP Data Explore web tool tells us that in 2019 testing, 33% of all Kentucky fourth graders and 27% of all Kentucky eighth graders scored below the reading level NAEP calls “Basic.” Those rather grim “Below Basic” NAEP results show what happens after the full treatment of RTA has already been applied.

Not getting the job done for massive numbers of kids

In Attachment A we use 2019 NAEP data and data derived by the KDE from the 2019 ACT college entrance test to estimate that overall Kentucky has about 200,000 students in the public school Kindergarten to twelfth grade system that have serious problems with reading.

NAEP results confirm the obvious; RTA can’t make much of a dent in this problem under any condition by treating only 10,000 of the 200,000 reading-challenged students.

Will Kentucky ever get reading right?

Failure of SB 115 to even move in the Kentucky House in 2021 indicates that public education reading programs in more forward-looking states like Mississippi²² are almost certain to move further ahead of the Bluegrass State in the future if Kentucky continues to fail to act.

So, we know why “Johnny Can’t Read,” but it seems like too many involved with Kentucky’s public education system are more concerned with “adult interests” than in fixing this serious reading instruction problem.

If Kentucky won’t fix this, parents deserve options

If Kentucky’s public school system remains on its current, low-performance trajectory for reading, this will provide even more justification for parents to demand additional options about where their children go to school. After all, reading is the most fundamental skill of all. Someone who can read has a much better chance of mastering other subject matter – be it science, history or math – than someone who cannot read well. In fact, since coursework after third grade is designed around the assumption that the student can read, a weak reader is basically going to be left out of the last nine years of K-12 education.

A final note to parents: Take action when you detect your child is having problems with reading. Do not assume the teacher has all the answers about reading. Based on the message from the NAEP and what the NCTQ tell us, too often in Kentucky it appears that would be an invalid assumption.

– Richard G. Innes is an education analyst at the Bluegrass Institute for Public Policy Solutions, Kentucky’s free market think tank. July 2021

Attachment A

An estimate of the magnitude of the reading problem in Kentucky

This attachment develops an estimate of the number of Kentucky Kindergarten to Grade 12 students who are in serious trouble for reading. It uses results from the NAEP and Kentucky's own KPREP tests to develop that estimate

To begin, the NAEP has four Achievement Level score levels: "Below Basic," "Basic," "Proficient" and "Advanced," with Advanced indicating the highest performance level.

Although we will be working with the NAEP Below Basic statistic, that statistic isn't separately defined. However, the definition of NAEP "Basic," the next highest achievement level only ***"denotes partial mastery of prerequisite knowledge and skills that are fundamental for proficient work at each grade."***²³

So, those scoring at the NAEP "Below Basic" level have even less than a partial mastery of reading.

According to the NAEP Data Explorer,¹² in 2019 NAEP Grade 4 and Grade 8 Reading "Below Basic" percentages were reported as 33% and 27% respectively.

Unfortunately, the NAEP only provides state-level results for Grades 4 and 8. We need something different to use for high school reading performance, hopefully based on a solid assessment.

It turns out that such a high school statistic is available from the state's KPREP testing. In 2019 the actual reading test used for KPREP reporting was the ACT College Entrance Test's Reading scoring. The ACT scoring was translated into the "Novice," "Apprentice," "Proficient" and "Distinguished" scoring levels used to report KPREP results.

But, does the lowest KPREP performance category of Novice reasonably correspond to NAEP's Below Basic score?

To assist with answering this question, a presentation by the Kentucky Commissioner of Education in April, 2019²⁴ says that a Novice score on KPREP indicates a student ***"has not demonstrated even a basic understanding of grade level content."***

In fact, as the commissioner added in his presentation:

"To put it more plainly, a student scoring at the Novice performance level is in a state of academic emergency."

So, scoring Novice on KPREP indicates something analogous to scoring Below Basic on NAEP. Students performing at this level certainly perform poorly – or even worse – on reading.

The state's own Kentucky School Report Card information for 2019 shows that 32.9% of all the state's 11th graders scored only Novice for reading on the state's ACT-based KPREP test.²⁵

Averaging the NAEP Grade 4 and Grade 8 Reading Below Basic percentages of 33% and 27% respectively with the KPREP Grade 11 Novice percentage of 32.9% indicates that on average about 31% of Kentucky's students should be considered in trouble for reading performance.

Applying that average percentage to the total public school K to 12 enrollment in Kentucky of about 648,000 students²⁶ leads to an estimate that **over 200,000 Kentucky students across all grade levels probably have seriously low reading ability.**

Obviously, helping only 10,000 students a year with the Read to Achieve program doesn't begin to meet the need.

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- ⁴ Kentucky Department of Education, “Transformations, Kentucky’s Curriculum Framework, Volume 2,” Frankfort, Kentucky, 1993. Online 1995 version available here: <http://www.e-archives.ky.gov/pubs/Education/transit2.pdf>.
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- ⁹ The full 499-page Report of the National Reading Panel is online here: <https://www.nichd.nih.gov/sites/default/files/publications/pubs/nrp/Documents/report.pdf>.
- ¹⁰ The various chapters in the 33-Page version of the National Reading Panel’s report are online here: <https://www.nichd.nih.gov/publications/pubs/nrp/smallbook>.
- ¹¹ National Council on Teacher Quality (NCTQ), “Teacher Prep Review, Program Performance in Early Reading Instruction 2020.” Online here: https://www.nctq.org/dmsView/NCTQ_2020_Teacher_Prep_Review_Program_Performance_in_Early_Reading_Instruction.
- ¹² See the NCTQ summary table available online here: <https://www.nctq.org/review/search/standard/Early-Reading>.
- ¹³ The NAEP Data Explorer is online here: <https://www.nationsreportcard.gov/ndecore/xplore/nde>.
- ¹⁴ Comments on Mississippi are drawn from a telephone conversation with Dr. Carrie Wright, Mississippi Superintendent of Education, on Dec. 2, 2019. Dr. Wright graciously took more than an hour to discuss some of the exciting things going on in the Magnolia State.
- ¹⁵ SB 115 is online here: <https://apps.legislature.ky.gov/record/21rs/sb115.html>.
- ¹⁶ Information about the Read to Achieve Program is online here: <https://education.ky.gov/curriculum/conpro/engla/Pages/RTA.aspx>. The number of students served by Read to Achieve was mentioned by several Kentucky Senate and House members and staff in multiple discussions regarding SB 115 and has been confirmed by the Kentucky Department of Education in an email dated June 1, 2021.

- ¹⁷ Based on author's analysis of the Kentucky Department of Education's 2019 ASSESSMENT_PROFICIENCY_GRADE Excel spreadsheet from the Kentucky School Report Cards system. Access from the Kentucky School Report Cards Datasets online here: <https://openhouse.education.ky.gov/Home/SRCData> at the "Assessments/Accountability" tab under the "Assessments Proficiency" "by Grade" link.
- ¹⁸ Information included in a Kentucky Department of Education E-Mail dated June 1, 2021.
- ¹⁹ Sampson, Shannon, PhD, et al, Kentucky's Read to Achieve Program Yearly Evaluation Report, 2018-2019, The Evaluation Center, Lexington, KY 40506, Aug. 31, 2019. Available on request from the Kentucky Department of Education.
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- ²¹ See the Kentucky Department of Education's Read to Achieve Web page at: <https://education.ky.gov/curriculum/conpro/engla/Pages/RTA.aspx>.
- ²² See comments about Mississippi's exciting reading program here: <https://bipps.org/blog/since-many-missed-it-kentucky-education-cant-say-thank-goodness-for-mississippi-anymore?rq=Mississippi>.
- ²³ The descriptions of NAEP's Achievement Level Scores are online here: https://nces.ed.gov/nationsreportcard/NDEHelp/WebHelp/achievement_levels.htm.
- ²⁴ Lewis, Wayne D., "The Meaning and Significance of Novice Performance on Assessments," Kentucky Department of Education, April 2019. Online here: <https://portal.ksba.org/public/Meeting/Attachments/DisplayAttachment.aspx?AttachmentID=476991>.
- ²⁵ See results in the ASSESSMENT_PROFICIENCY_GRADE Excel spreadsheet from the Kentucky Department of Education. Online here: https://openhouse.education.ky.gov/Data/Download?file=ASSESSMENT_PROFICIENCY_GRADE.xlsx&path=SRC%5CDatasets%5C20182019.
- ²⁶ Find a summary of Kentucky's Kindergarten to Grade 12 enrollment here: <https://education.ky.gov/comm/edfacts/Pages/default.aspx>