



# Teaching Reading Really is Rocket Science

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# Teaching Reading is Rocket Science

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- Inarguably, the development of proficient reading ability is the single most important skill a child can learn by the end of third grade.



# Teaching Reading is Rocket Science

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## The Reading Truth: Part One

Reading is an incredibly complex, unnatural process. Unlike learning to speak, our brains are not wired to learn how to read through mere exposure to print. Reading needs to be taught directly, explicitly, and systematically, using an evidenced-based approach.



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## Ramifications of Illiteracy for Society

“The link between academic failure and delinquency, violence and crime **is welded to reading failure.**”

U.S. Department of Justice



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## Ramifications of Illiteracy for Society

“43% of Americans with the lowest literacy skills live in poverty and 70% have no job or a part-time job. Only 5% of Americans with strong literacy skills live in poverty.”

National Institute for Literacy



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## Ramifications of Illiteracy for Society

“75% of unemployed adults have reading or writing difficulties.”

National Institute for Literacy



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## Ramifications of Illiteracy for Society

“70% of the inmates in America’s prisons can’t read above the 4th grade level.”

Proliteracy



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## Ramifications of Illiteracy for Society

There are actually states in the United States that build prisons based on the illiteracy rates of middle school students.

- Dr. Lesley Morrow, President, International Reading Association
- (9-8-03 Children of the Code interview)





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- It is estimated that 20% of students in the United States have dyslexia, an unexpected problem learning to read.
  - Dr. Sally Shaywitz, Director of Yale's Haskins Laboratory and author of **Overcoming Dyslexia**



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## The Reading Truth: Part Two

We are not very good at teaching reading as 65% of our nation's fourth graders do not read proficiently. (They do not have an adequate understanding of what they have read.)

30%+ do not have basic reading skills. (They cannot decode the printed word from the page.)

2011 NAEP Scores



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If a child with a reading difficulty is not identified and proper forms of intervention provided by the start of third grade, there is only a 25% chance that that student will ever read at grade level in his public school career.

National Institutes of Health, 2005



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From a research perspective, characteristics of good reading instruction:

- Appropriate scope and sequence of skills that are developmentally-based
- Direct and Explicit
- Diagnostic-Prescriptive
- Sequential and Systematic
- Multi-sensory
- Developmentally-Appropriate Meta Aspect



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Five Strands of Reading Determined important by the findings of the National Reading Panel (2000):

- Phonemic Awareness
- Phonics
- Fluency
- Vocabulary
- Comprehension



# Teaching Reading is Rocket Science: Quality Core Instruction

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## Phonemic Awareness:

It is essential that students who are learning to read have adequate phonemic awareness. That is he can hear, segment, and manipulate the sounds found within words.

Ex: “What is /tick/ without the /t/?”



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## Phonemic Awareness:

It is essential to understand that speech sounds differ from our orthographic (spelling) system. Unless teachers can distinguish speech sounds and teach them both in isolation and when co-articulated, it is very difficult, if not impossible, to convey this understanding to students.



# Error Analysis

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What is this student trying to spell?

grs





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## Phonics:

Phonics is the symbol-sound structure of our language. It is essential for students to have a foundational knowledge of phonics in order to read and spell.



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## Phonics example:

We teach c, /cat/, /k/. The students practice reading word lists that follow this pattern. What happens when they reach the word, "city"?

"city" becomes "kitty." Why should "city" be "sity" instead of "kitty?" Because "c" followed by "i," "e," or "y" says /s/ as in "city," "cycle," and "cent."



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It is very important that we teach reading and spelling together so that they reinforce each other.

For example, as the student learns that “c” before “i,” “e,” or “y” says /s/, they **read and spell** this pattern of the rule using controlled word lists.



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## Fluency:

Fluency is comprised of reading accuracy and reading rate. If a reader is not accurate or does not read at a sufficient rate, there is not enough mental energy available for the true purpose of reading, comprehension. Fluency is a critical piece of the reading process and must be modeled and practiced consciously and consistently.



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## Vocabulary:

Background information, including familiarity with the vocabulary of a given topic, is an important predictor of comprehension. Like all strands of reading, vocabulary instruction should be direct and systematic. Vocabulary is also learned through reading. Students who struggle to read will also lag in vocabulary development.



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## Vocabulary:

When teaching vocabulary, it is critical to teach morphology. Morphology is the study of word meaning. By having an explicit awareness of morphemes, the smallest unit of meaning in a language, teachers can better teach vocabulary and help students become more efficient readers by helping them “chunk” word parts.



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## Studying morphology to learn vocabulary

Analyze "Important"

Im (in): "in" or "into"

Port: "carry"

Ant: adjectival suffix

Question: How does "carry into" come to mean, "very great" or "highly valued"?



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## Using analogies to teach vocabulary

Create a bridge sentence for the key words of the analogy: Beacon: Sailor

A sailor uses a beacon to guide him at night.





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Using the bridge sentence, “A sailor uses a beacon to guide him at night.” answer the analogy.

Beacon: Sailor

- nutrition: athlete
- lamp: reader
- horse: cowboy
- pipe: smoker
- advertisement: public



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## **Comprehension:**

Comprehension is obviously the goal of reading, but it is wrong to assume that if the student can read the material, he can have a full understanding of what he has read. Comprehension also needs to be taught directly and systematically.



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## Comprehension Strands:

- Main Idea
- Detail
- Cause-Effect
- Inferential
- Interpretive



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## Teaching of Comprehension:

- Keys to Literacy
- Story Grammar
- Paragraph Structure for expository text
- Reciprocal Reading
- Text Mapping using graphic organizers
- S.Q.3R: Survey, Question, Read, Recite, Review

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## Variables of Instruction

- The instruction itself (curriculum)
- The intensity of instruction
- The frequency of instruction
- The duration of instruction
- **Knowledge and skill of the teacher**



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## Five Components of Literacy Framework

- Quality Core Instruction
- Data-based Decision Making
- Response to Intervention Model
- Time for Professional Collaboration
- Time for Ongoing, Deep PD



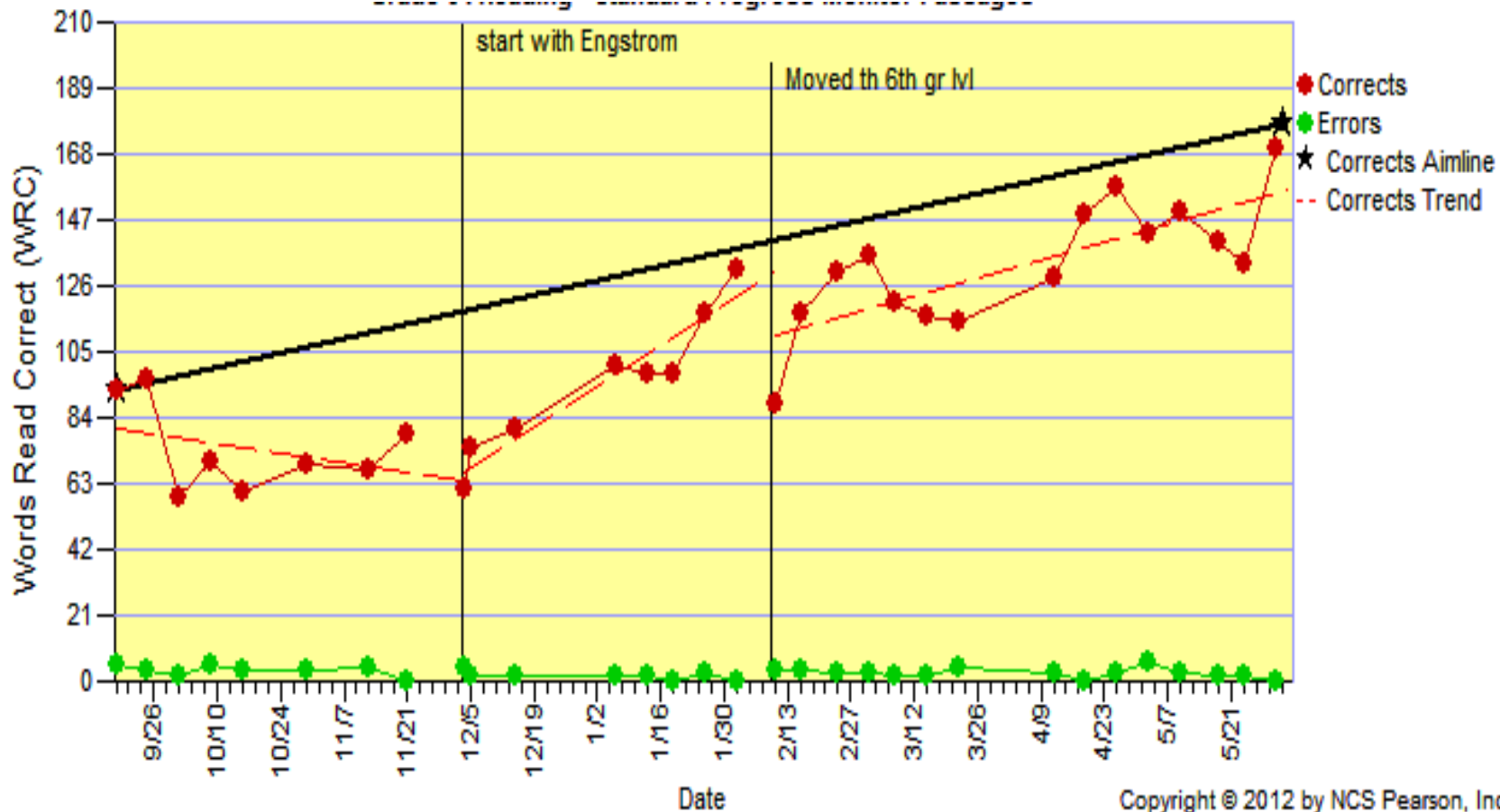
# Teaching Reading is Rocket Science: Quality Core Instruction

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## Curricula reflecting QCI

- Orton-Gillingham
- Wilson Reading System
- Foundations
- Slingerland
- Hermann
- Alphabetic Phonics
- Barton Reading Systems
- Sonday Reading Systems

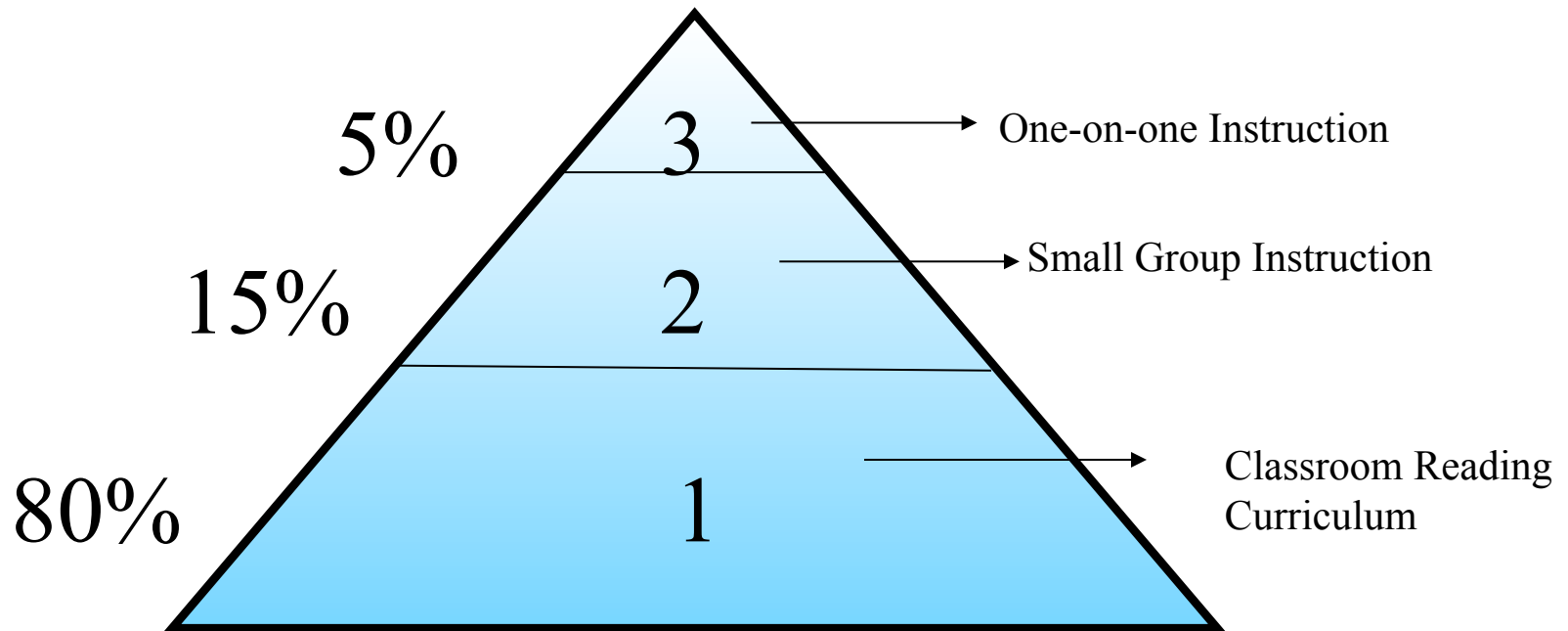
# Teaching Reading is Rocket Science: Data-Based Decision Making: A Sixth Grade Student



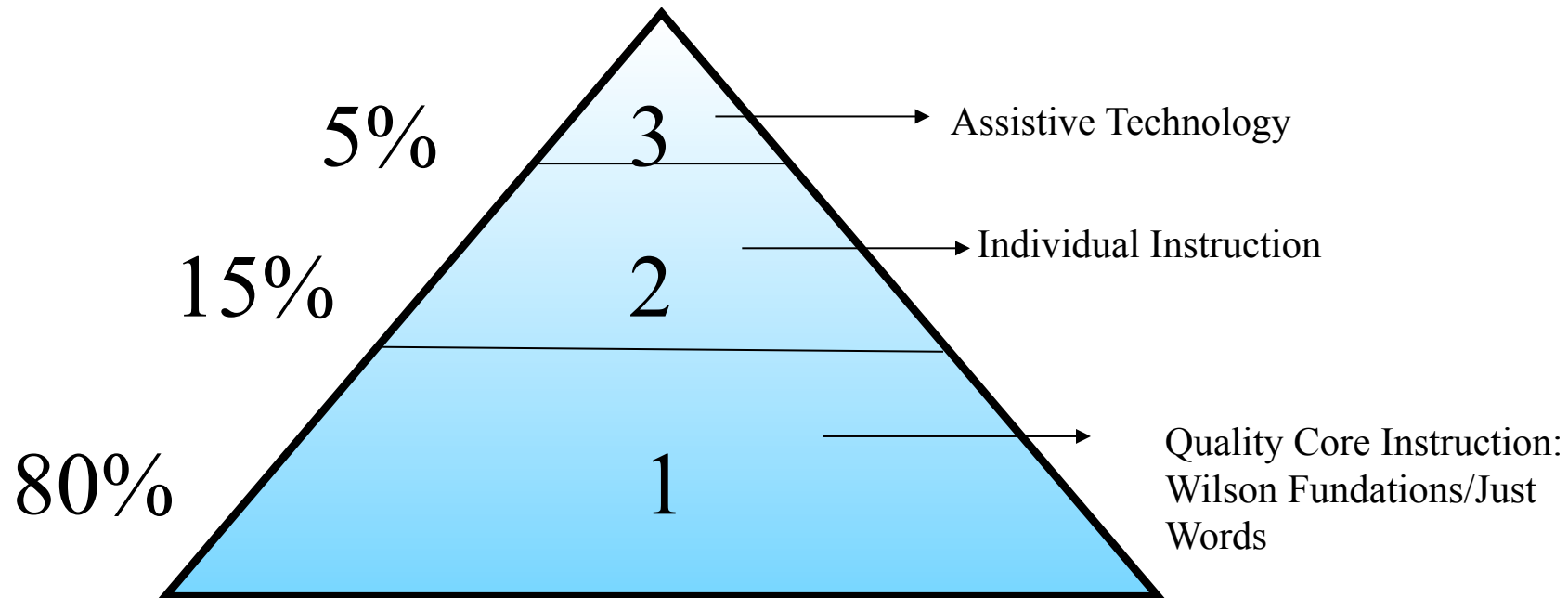
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# Teaching Reading is Rocket Science: An RTI Public School Model

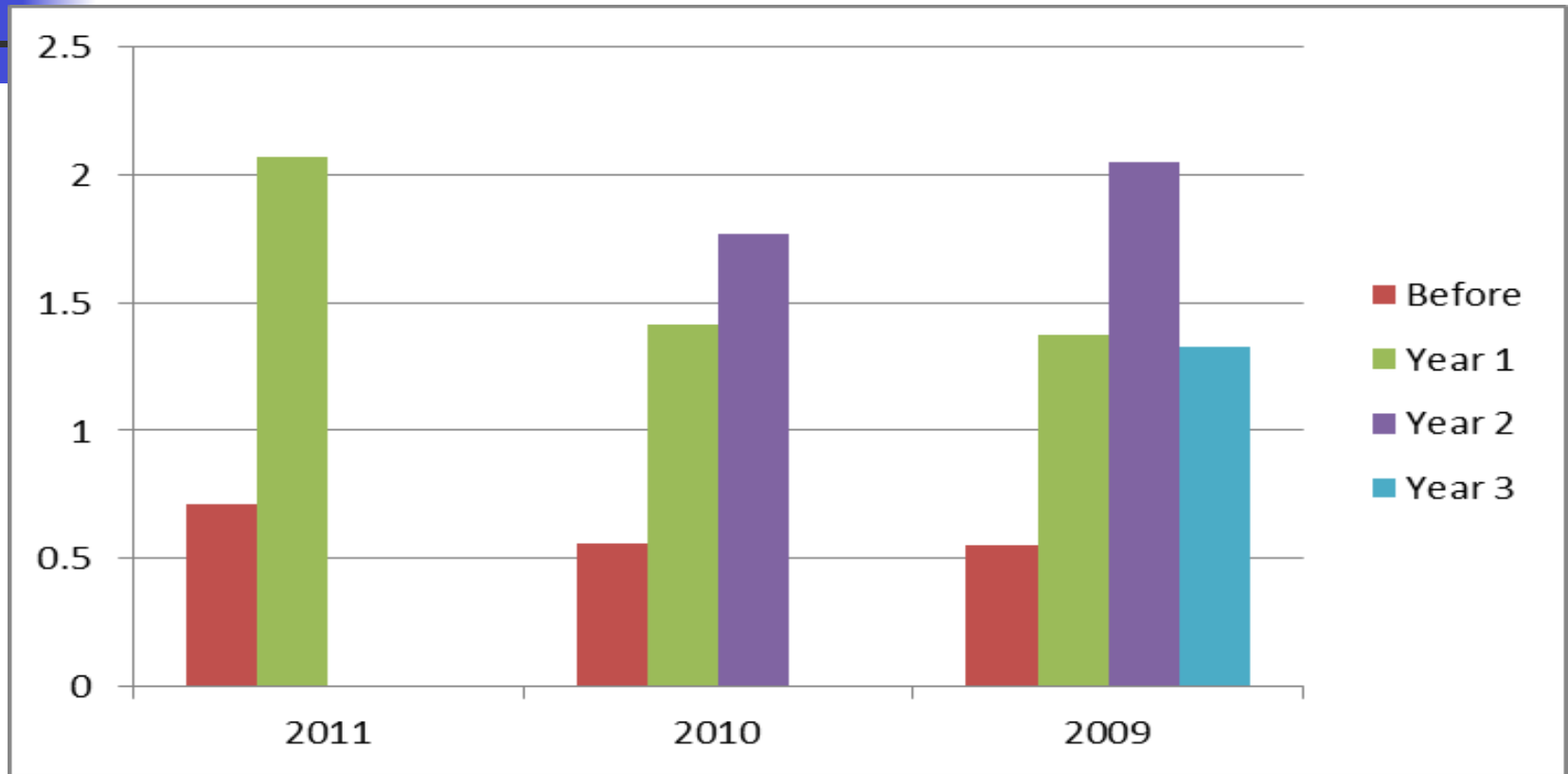


# Teaching Reading is Rocket Science: An RTI Groves Academy Model



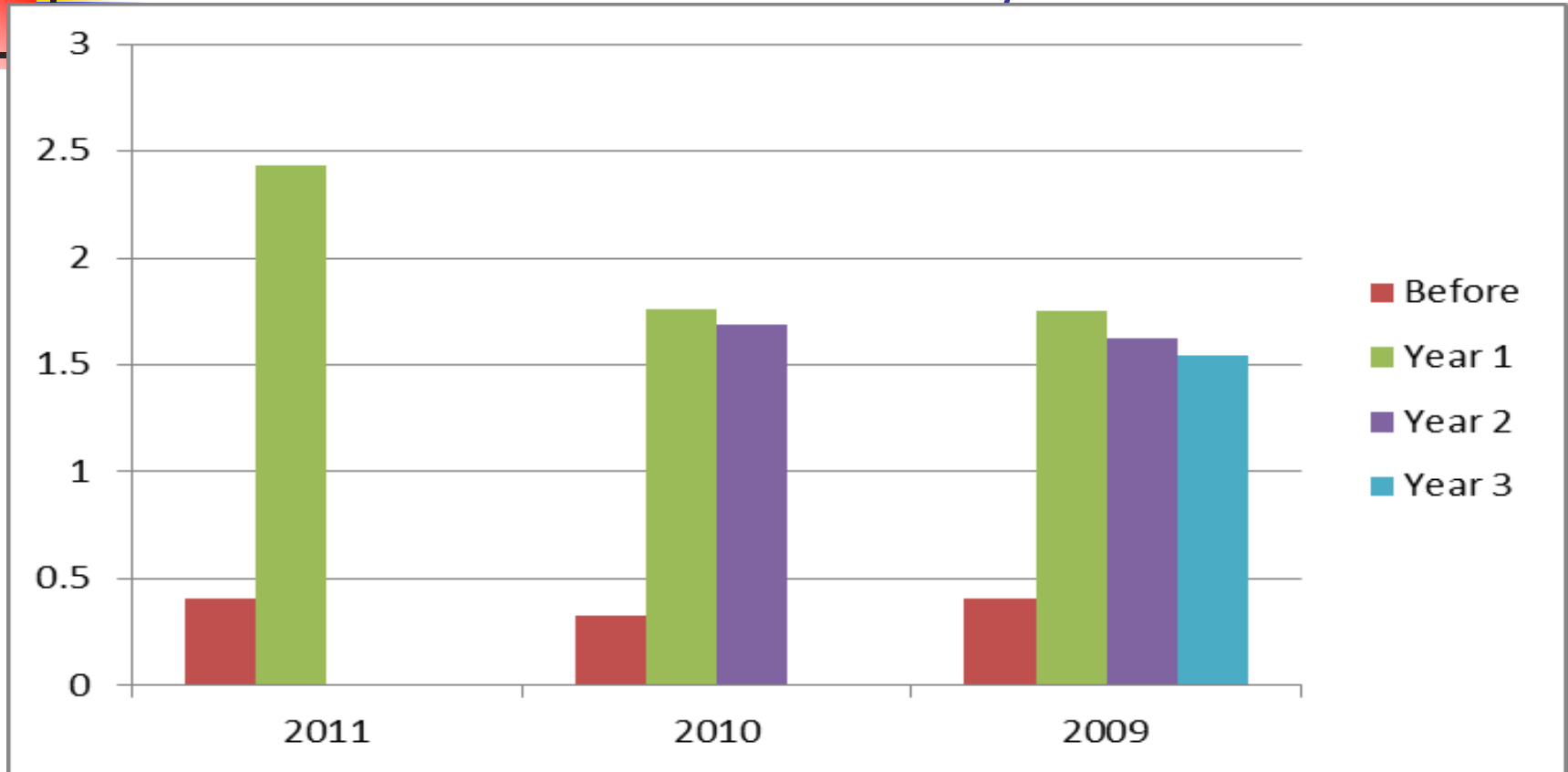
# Teaching Reading is Rocket Science: Results

## Gray Silent Reading Comprehension Test All Students



# Teaching Reading is Rocket Science: Results

## Gray Silent Reading Comprehension Test Students with Reading Disabilities



# Understanding the Structures of Language



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Some Fun:

What was this child trying to spell and why did he make the error?

**“Chrane”**

# Understanding the Structures of Language

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sbidr

# Understanding the Structures of Language

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budr



# Teaching Reading is Rocket Science: Policy

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The resistance in the educational community, particularly at the higher education level where teachers are trained, is enormous, almost unbelievable. When you show people objective information, non-philosophically driven research that for these kids, these interactions work very productively such that where a youngster was at the 10th percentile in reading before, and is now at the 60th percentile in reading, and you can show that time after time, but you still see substantial resistance from the educational community, it begins to tell us that many of these issues are way beyond the kid issues, these are adult issues. They are fascinating adult issues where human beings are latching on to their beliefs, their assumptions, their egos and their careers rather than looking very clearly at what works, what doesn't, making sure people know what works, measuring it and getting the kids up to snuff.

Reid Lyon, "**Children of the Code Interview**"

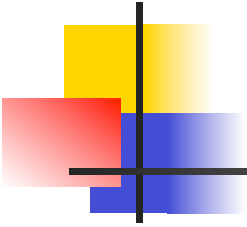


# Reading Resources



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- Sally Shaywitz's, Overcoming Dyslexia
- Anthony Pedriana, Leaving Johnny Behind: Overcoming Barriers to Literacy and Reclaiming At-Risk Readers
- International Dyslexia Association (IDA) 410.296.0232  
[www.interdys.org](http://www.interdys.org)
- Louisa Moats, "The Missing Foundation in Teacher Education"
- Children of the Code <http://www.childrenofthecode.org/>
- National Institutes of Child Health and Human Development (NICHD) <http://www.nichd.nih.gov/default.htm>
- National Reading Panel: Teaching Children to Read  
[www.nationalreadingpanel.org](http://www.nationalreadingpanel.org)
- Groves Academy (952.920.6377) [info@grovesacademy.org](mailto:info@grovesacademy.org);  
[www.grovesacademy.org](http://www.grovesacademy.org)
- Upper Midwest Branch of the International Dyslexia Association (UMBIDA) 651.450.7589
- Orton Gillingham of Minnesota (OG-M) 763.951.2379  
[www.ortongillingham-mn.org](http://www.ortongillingham-mn.org)
- Lindamood-Bell of the Twin Cities: 952.835.0700  
[www.readingrockets.org](http://www.readingrockets.org)





# Teaching Reading is Rocket Science: Policy

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Minnesota has also responded to falling test scores. In January, 2007, a state reading task force was created. There are fifteen members on the committee including: seven college/university professors; two from the Minnesota Department of Education; two from the Minnesota Board of Teaching; three representing independent organizations involved in reading; and one parent advocate.



# Teaching Reading is Rocket Science: Policy

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## Reading Task Force Mandate:

Minnesota is a standards-based state, not a credit-hours-based state. The standards are not precise and do not reflect the necessary knowledge to teach reading. Our task force has been charged with creating standards and competencies for teachers who teach reading.



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## Reading Task Force Challenges:

There is very little time devoted to reading courses in undergraduate programs that certify elementary school teachers.



# Teaching Reading is Rocket Science: Policy

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## Reading Task Force Challenges:

The accountability factor in terms of the current standards is weak and does not match what research demonstrates in the teaching of reading.



# Teaching Reading is Rocket Science: Policy

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## Reading Task Force Challenges:

Participants on the reading task force have a wide range of beliefs and values when it comes to preparing teachers.



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There are currently five standards and fifty-six different competencies, one of which focuses on the five strands identified by the NRP as being the most critical elements of reading instruction. Despite what scientific research demonstrates, the task force is unwilling to prioritize standards or competencies.





# Teaching Reading is Rocket Science: Policy

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The majority of task force members view creating an engaging classroom or creating a motivating environment to be equal to the importance of having teachers have a knowledge of the five strands that can be applied in the classroom.



# Teaching Reading is Rocket Science: Policy

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As long as we cannot agree that there are more important aspects in the preparation of teachers, I do not believe that there will be fundamental changes in the way teachers are prepared to teach reading and, more importantly, too many Minnesota children will unnecessarily experience the pain and frustration of not being taught how to read.



# Teaching Reading is Rocket Science: Policy

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While we are not optimistic that we will make the needed changes through the reading task force, we have another avenue:

**State legislature**