Meeting the Instructional Needs of Students with Reading Disabilities: Issues in Prevention and Remediation

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First Reader
By Billy Collins

I can see them standing politely on the wide pages that I was still learning to turn, Jane in a blue jumper, Dick with his crayon-brown hair, playing with a ball or exploring the cosmos of the backyard, unaware they are the first characters, the boy and girl who begin fiction.

Beyond the simple illustrations of their neighborhood, the other protagonists were waiting in a huddle: frightening Heathcliff, frightened Pip, Nick Adams carrying a fishing rod, Emma Bovary riding into Rouen.

But I would read about the perfect boy and his sister even before I would read about Adam and Eve, garden and gate, and before I heard the name Gutenberg, the type of their simple talk was moving into my focusing eyes.
It was always Saturday and he and she were always pointing at something and shouting, “Look!” pointing at the dog, the bicycle, or at their father as he pushed a hand mower over the lawn, waving at aproned mother framed in the kitchen doorway, pointing toward the sky, pointing at each other.

They wanted us to look but we had looked already and seen the shaded lawn, the wagon, the postman. We had seen the dog, walked, watered and fed the animal, and now it was time to discover the infinite, clicking permutations of the alphabet’s small and capital letters. Alphabetical ourselves in the rows of classroom desks, we were forgetting how to look, learning how to read.
What is the most important single goal of reading instruction?

To help students acquire all the skills and knowledge they need to comprehend text fluently.
What skills, knowledge, and attitudes are required for good reading comprehension?
What we know about the factors that affect reading comprehension

Proficient comprehension of text is influenced by:

- Accurate and fluent word reading skills
- Oral language skills (vocabulary, linguistic comprehension)
- Extent of conceptual and factual knowledge
- Knowledge and skill in use of cognitive strategies to improve comprehension or repair it when it breaks down.
- Reasoning and inferential skills
- Motivation to understand and interest in task and materials
In other words, student’s reading comprehension depends on:

- How well they read the words on the page
- How much they know, and how well they think
- How motivated they are to do “the work” of comprehension
Reading is a multifaceted skill, gradually acquired over years of instruction and practice.
Three potential stumbling blocks to becoming a good reader (NRC Report, 1998)

1. Difficulty learning to read words accurately and fluently

2. Insufficient vocabulary, general knowledge, and reasoning skills to support comprehension of written language

3. Absence or loss of initial motivation to read, or failure to develop a mature appreciation of the rewards of reading.
The majority of children who experience reading problems in elementary school have early difficulties acquiring accurate and fluent word reading skills beginning in kindergarten.
Difficulties mastering the use of “phonics” skills as an aid to accurate, independent reading

- difficulties learning letter-sound correspondences
- difficulties with the skills of blending and analyzing the sounds in words (phonemic awareness).

Slow development of “sight vocabulary” arising from:

- limited exposure to text
- lack of strategies to reliably identify words in text
By third grade, children who experience difficulties acquiring accurate and fluent word reading skills show two kinds of difficulties when reading grade level text:

**When asked to read grade level text:**

1. The child cannot recognize a sufficiently high proportion of the words easily, at a single glance, to support fluent reading. Too many of the words fall outside the child’s “sight vocabulary.”

2. The child does not employ efficient strategies to accurately and quickly identify unknown words. Use of phonemic decoding strategies is particularly impaired.
The Surprise Party

My dad had his fortieth birthday last month, so my mom planned a big surprise party for him. She said I could assist with the party but that I had to keep the party a secret. She said I couldn’t tell my dad because that would spoil the surprise.

I helped mom organize the guest list and write the invitations. I was responsible for making sure everyone was included. I also addressed all the envelopes and put stamps and return addresses on them.....
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I helped mom organize the guest list and write the invitations. I was responsible for making sure everyone was included. I also addressed all the envelopes and put stamps and return addresses on them…..
The nature of the underlying difficulty for most children who have problems acquiring accurate and fluent word reading ability

Weaknesses in the phonological area of language ability

inherent, or intrinsic, disability

lack of certain types of language experience

Expressed in kindergarten by poor development of phonemic awareness and letter-sound knowledge

Expressed in 1st and 2nd grade by poor development of phonemic decoding skills
Phonological Language Ability is not highly Correlated with General Verbal Ability as measured by IQ tests
Phonological Language Ability is not highly Correlated with General Verbal Ability as measured by IQ tests.
What is the fundamental conceptual error in using IQ-achievement discrepancies to identify young children with reading disabilities?

1. Children with reading problems not discrepant from their intelligence appear to have the same type of problems with early reading as children whose reading is discrepant from their IQ: they both have difficulties resulting from weaknesses in the phonological domain.

2. “Slow learners” have difficulties learning to read, not because of low IQ, but because of weaknesses in the phonological language domain.

3. Discrepant and non-discrepant children require the same type of instruction in basic reading skills in order to acquire critical beginning reading skills.
Very simply put, we have two broad classes of children who experience difficulties learning to read in school:

Children who enter school with adequate general verbal ability and knowledge, but specific weaknesses in the phonological language domain.
These children we have referred to as “reading disabled” or “dyslexic”

A new science based definition --

“Dyslexia is a specific learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction.” (Lyon & Shaywitz, 2003)
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A new science based definition --

Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge.”

Phonological Language Ability is not highly Correlated with General Verbal Ability as measured by IQ tests.
Must a child have intelligence in the average range to be diagnosed as dyslexic?

The traditional answer to this question has been yes.

This answer was based on the following beliefs about differences between “dyslexics” and “slow learners”

Their reading problems had different causes

They had different prognoses

They required different treatments

Recent research has shown these beliefs to be incorrect
Phonological Language Ability is not highly Correlated with General Verbal Ability as measured by IQ tests.
Very simply put, we have two broad classes of children who experience difficulties learning to read in school:

- Children who enter school with adequate general verbal ability and knowledge, but specific weaknesses in the phonological language domain.

- Children who enter school with weaknesses in the phonological language domain, who also have weaknesses in broader language domains such as vocabulary and verbal knowledge.

Both groups have the same phonological problem that makes it difficult to learn to read, but only one group (the discrepant one) is eligible for services as learning disabled.
Summary Statement: Two broad areas of weakness in language and/or cognition can make it difficult for children to acquire proficient reading skills by third grade.

Weaknesses in the phonological area of language ability

Weaknesses in broad verbal ability (knowledge and/or verbal reasoning)

These weaknesses can have at least two kinds of causes:

Biologically based – inherent or result of disease or deprivation

Environmentally based – result of lack of certain kinds of language or cognitive experience in the home
Each of these kinds of weakness is normally distributed in the population

Percentile Ranks

Moderate difficulties-like David

Standard Scores

70  85  100  115  130
David
Each of these kinds of weakness is normally distributed in the population.

Percentile Ranks:
- 2nd percentile: Serious difficulties—probably require special interventions and a lot of extra support.
- 16th percentile
- 50th percentile (average)
- 84th percentile
- 98th percentile

Standard Scores:
- 70
- 85
- 100
- 115
- 130
Growth in Word Reading Ability

About 1.6% of student population

About 1.6% of student population
A model for preventing reading failure in grades K-3: The big Ideas

1. Increase the quality, consistency, and reach of instruction in every K-3 classroom

2. Conduct timely and valid assessments of reading growth to identify struggling readers

3. Provide more intensive interventions to “catch up” the struggling readers

The prevention of reading difficulties is a school-level challenge
Three Definitions of Schools

A series of autonomous classrooms that are connected by a common parking lot.

A place where the relatively young watch the relatively old work.

A complex organization that is built upon relationships that require individuals to work interdependently.
Evidence from one school that we **can** do substantially better than ever before

**School Characteristics:**

- 70% Free and Reduced Lunch (going up each year)
- 65% minority (mostly African-American)

**Elements of Curriculum Change:**

- Movement to a more balanced reading curriculum beginning in 1994-1995 school year (incomplete implementation) for K-2
- Improved implementation in 1995-1996
- Implementation in Fall of 1996 of screening and more intensive small group instruction for at-risk students
Hartsfield Elementary Progress over five years

Proportion falling below the 25th percentile in word reading ability at the end of first grade

<table>
<thead>
<tr>
<th>Year</th>
<th>Proportion</th>
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<tbody>
<tr>
<td>1995</td>
<td>31.8</td>
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<tr>
<td>1996</td>
<td>20.4</td>
</tr>
<tr>
<td>1997</td>
<td>10.9</td>
</tr>
<tr>
<td>1998</td>
<td>6.7</td>
</tr>
<tr>
<td>1999</td>
<td>3.7</td>
</tr>
</tbody>
</table>

Average Percentile for entire grade (n=105)

<table>
<thead>
<tr>
<th>Year</th>
<th>Average Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>48.9</td>
</tr>
<tr>
<td>1996</td>
<td>55.2</td>
</tr>
<tr>
<td>1997</td>
<td>61.4</td>
</tr>
<tr>
<td>1998</td>
<td>73.5</td>
</tr>
<tr>
<td>1999</td>
<td>81.7</td>
</tr>
</tbody>
</table>

Screening at beginning of first grade, with extra instruction for those in bottom 30-40%
Proportion falling below the 25th Percentile

Average Percentile


48.9  55.2  61.4  73.5  81.7

Hartsfield Elementary Progress over five years

Proportion falling below the 25th Percentile

Average Percentile


58.2  67.1  74.1  81.5
Principals, classroom teachers, and special education teachers must work interdependently to leave no child behind

1. Increase the quality, consistency, and reach of instruction in every K-3 classroom

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A model for preventing reading failure in grades K-3: The big Ideas

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Why is good early assessment so critical?

A central problem in reading instruction arises, not from the absolute level of children’s preparation for learning to read, but from the diversity in their levels of preparation

(Olson, 1998)
Two kinds of assessments that are not commonly done are required in a school level system for leaving no child behind.

Screening assessments

Progress monitoring assessments

If we do these assessments well we will not overlook our students who are less well prepared and who are not making adequate progress in learning to read.
What can teachers learn from reliable screening measures?

Screening

Which children are entering my class weak in the skills and knowledge that are required for success in my classroom?

What are the skills and knowledge that are particularly weak in these children?

Decisions to be made

What children in my class are most in need of extra support in order to achieve grade level reading by the end of the year?

What areas of skill and knowledge are most in need of extra support?
Growth in Word Reading Ability

National Percentile

October January May

30 70

25th 50th 75th
What can teachers learn from progress monitoring tests?

Information from progress monitoring

Are the children actually learning what I am teaching?

Are the children ready to move forward in the curriculum?

Is my intervention strong enough to place the children on a growth trajectory that ends in grade level performance by the end of the year?
2nd Grade Growth in Oral Reading Fluency

Correct words per minute

Sept  | Dec  | Feb  | May  
----- |----- |----- |----- 
 32   | 48   | 64   | 80   |
What can teachers learn from these assessments?

Information from progress monitoring

Are the children actually learning what I am teaching?

Are the children ready to move forward in the curriculum?

Is my intervention strong enough to place the children on a growth trajectory that ends in grade level performance by the end of the year?

Decisions to be made

Should I reteach the last unit to some of my children?

Should I move the child to a smaller group, or program more instructional time?

Should I seek help to implement a more powerful instructional strategy?
In order to monitor progress adequately, we need two different kinds of information about progress:

**Information from curriculum embedded tests or teacher obs.**

- Are the children actually learning what I am teaching?
- Are the children ready to move forward in the curriculum?

**Information from “index” tests like the DIBELS**

- Is my instruction powerful enough to place the child on a trajectory for grade level achievement by the end of the year?
Progress monitoring with an “index” test— the DIBELS subtests

Involves progress monitoring assessments 3-4 times a year

Development of phonemic awareness and phonics skills is monitored 3-4 times a year from kindergarten through first grade. Oral reading fluency is monitored from first through third grade.

1st sound fluency

Letter naming fluency

Phoneme Seg. fluency

Nonsense Word fluency

Oral Reading Fluency – one minute timed passages
The Dynamic Indicators of Basic Early Literacy Success
DIBELS: Basic Rationale

Data from many thousands of students has shown that how children perform on certain “index” skills is very predictive of whether they will be reading on grade level by third grade.

In kindergarten, these areas of skill and knowledge are:
- phonemic awareness
- letter knowledge
- vocabulary

In 1st grade, these areas of skill and knowledge are:
- phonemic awareness
- phonemic decoding
- vocabulary
- reading fluency
- comprehension strategies

In 2nd and 3rd grade, these areas of skill and knowledge are:
- vocabulary
- reading fluency
- comprehension strategies
The Dynamic Indicators of Basic Early Literacy Success

DIBELS: Basic Rationale

The DIBELS tests are valid and reliable measures of most of these constructs, but not all of them.

In kindergarten, these areas of skill and knowledge are:
phonemic awareness, letter knowledge, **vocabulary**

In 1\textsuperscript{st} grade, these areas of skill and knowledge are:
phonemic awareness, phonemic decoding, **vocabulary**, reading fluency, **comprehension strategies**

In 2\textsuperscript{nd} and 3\textsuperscript{rd} grade, these areas of skill and knowledge are:
**vocabulary**, reading fluency, **comprehension strategies**
Progress Report

- **All Participating Districts**
  - **School:** All Participating RF Schools
  - **Teacher:** All Teachers

- **1st Grade**
  - **Probe:** Nonsense Word Fluency
  - **Student:** All Students

- **Assessment:** All Assessments
  - **School Year:** 2003-2004
  - **Date/Time:** 6/19/2004 4:17 PM

### Box Plots

- **44th percentile**
- **31st percentile**

### Assessment Results

- **Correct Letter Sounds in a Minute**
  - **Assessment 1:** # of Students 32070
  - **Assessment 2:** # of Students 32431
  - **Assessment 3:** # of Students 32511

- **51%**
  - 25%
  - 24%

- **55%**
  - 32%
  - 13%

- **40%**
  - 39%
  - 21%

- **35%**
  - 35%
  - 12%

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**Achieved benchmark late**
At the beginning of 2nd grade, most of our students had not achieved the 1st grade benchmark for phonemic decoding.

At the end of second grade, we still have more than 20% of our students who have not achieved the first grade benchmark in phonemic decoding.
Oral Reading Fluency – Assess4, Third Grade

29,475 students

Ave. WPM = 105
35th percentile

35% moderate risk

22% high risk

Std. Dev = 36.87
Mean = 105.3
N = 29745.00
Principals, classroom teachers, and special education teachers must work interdependently to leave no child behind

1. Increase the quality, consistency, and reach of instruction in every K-3 classroom

2. Conduct timely and valid assessments of reading growth to identify struggling readers

3. Provide more intensive interventions to “catch up” the struggling readers
Features of Scientifically Based Reading Interventions

How does intervention differ from core reading instruction?

Intervention is MORE:

- Explicit
- Systematic
- Intensive
- Supportive
Explicit

Nothing is left to chance; all skills are taught directly.

Always involves:

- Direct explanations
- Modeling of correct responses
- Opportunities for student responses with corrective feedback

It takes a great deal more knowledge and skill to teach explicitly
Systematic

Instruction is purposeful and sequential.

Always involves:

- A scope and sequence of instruction that is well organized and hierarchical
- Students being well prepared for each new task they are asked to do
Programmatic Scaffolding

Oral blending skills before blending printed words

Awareness of phonemes before learning how they are represented in print

Grapheme-phoneme knowledge before decoding

Vocabulary instruction before reading for meaning

Strategies for oral language comprehension that support reading comprehension
The most direct way to increase learning rate is by increasing the number of positive, or successful, instructional interactions (pii) per school day.

Intensity can be accomplished in two ways:
- Decreasing group size (3-5)
- Increasing the amount of time in instruction

Small group instruction can be just as effective as 1:1 instruction for prevention.
Supportive

At-risk/struggling readers benefit from a supportive environment, both emotionally and cognitively.

Students need encouragement, feedback and positive reinforcement.

Responsive Scaffolding
Teaching children to identify the first phoneme in words

After telling child the names of the pictures, teacher says, “which one begins with /s/?” Child chooses fan

“fan begins with /f/, which one begins with /s/? Child chooses can

“Listen, I’m going to say the names of the pictures very slowly- see which one begins with /s/ - “f-an, f-ire, c-an, s-ack” which one?
Two kinds of scaffolding are important

Responsive Scaffolding

Word reading error – “let’s check this word. Can you read it for me?"
Child reads “side”.
Teacher says, “you’re right that the word begins with the /s/ sound. What letter do you see coming right after the s in this word?”
Child says “l”
Teacher says, “what sound does “l” make?”
Child says “/l/”
Teacher says, “if you say the /l/ sound right after /s/ in this word, what word does that make?”
How should our interventions be focused?

They should target reading skills that are deficient, and that will make a long-term difference to reading outcomes.
Effective early reading interventions must build reading skills in five important areas by providing instruction that is both engaging and motivating.

- Phonemic Awareness
- Phonics
- Fluency
- Vocabulary
- Comprehension strategies

Taught by methods that are...

- Identifying words accurately and fluently
- Constructing meaning once words are identified
- Engaging & motivating
How should our interventions be focused?

They should target reading skills that are deficient, and that will make a long-term difference to reading outcomes.

For example:

No child should leave first grade without being proficient in phonemic decoding, because it is critical for reading accuracy, and early accuracy is critical for eventual fluency.

Children should accelerate rapidly in fluency during second and third grade in preparation for the complex text they will encounter by the end of third grade and later.

From the beginning of reading instruction, students low in vocabulary must accelerate rapidly to be ready for complex text by the end of third grade.
Combining Art and Science to produce powerful interventions

Contributions from science

Based on reliable and valid assessment of student needs
Focused on critical areas of reading growth that will have long term impact
Employs explicit instructional routines—students are directly taught what they need to know
Uses evidence-based instructional methods—modeling, corrective feedback, etc.
Uses proven methods for motivating student engagement
Combining Art and Science to produce powerful interventions

Contributions from the art of teaching

- Responsive scaffolding when needed
- Appropriate pacing
- Warm and supportive atmosphere
- Simultaneous monitoring of each student’s responses
- Fluent mastery of all instructional routines
The top five myths about interventions for struggling readers

1. If a child is a “visual” learner, they should be taught to read using a visual, not an auditory strategy.

2. If a child has not learned “phonics” by the end of first grade, they need to be taught to read in some other way.

3. Children who struggle with phonemic awareness, vocabulary, or phonics in kindergarten and first grade will frequently “catch up” if given time.

4. We should take guidance from theories of “multiple intelligences” or “learning styles” to help us adapt our reading instruction for different children.

5. A little quality time with an enthusiastic volunteer tutor can solve most children’s reading problems.
What about interventions for older students who continue to struggle in reading?
Can phonics be successfully taught to students who still struggle in this area as fourth graders?

Should phonics be taught to students beyond early elementary school who still do not have proficient skills in this area?
A study of intensive, highly skilled intervention with 60 children who had severe reading disabilities

Children were between 8 and 10 years of age

Had been receiving special education services for an average of 16 months

Nominated as worst readers: at least 1.5 S.D’s below grade level

Average Word Attack=69, Word Identification=69, Verbal IQ=93

Randomly assigned to two instructional conditions that both taught “phonics” explicitly, but used different procedures with different emphasis

Children in both conditions received 67.5 hours of one-on-one instruction, 2 hours a day for 8 weeks

Children were followed for two years after the intervention was completed
Growth in Total Reading Skill Before, During, and Following Intensive Intervention
Outcomes from 67.5 Hours of Intensive intervention

<table>
<thead>
<tr>
<th>Standard Score</th>
<th>Word Attack</th>
<th>Text Reading Accuracy</th>
<th>Reading Comp.</th>
<th>Text Reading Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>96</td>
<td>89</td>
<td>86</td>
<td>91</td>
<td>75</td>
</tr>
</tbody>
</table>

Word Attack: 68
Text Reading Accuracy: 74
Reading Comp.: 73
Text Reading Rate: 71

30%
Oral Reading Fluency was much improved on passages for which level of difficulty remained constant

Absolute change in rate from pretest to 2-year follow-up.

<table>
<thead>
<tr>
<th></th>
<th>Prestest -- 38 WPM, 10 errors</th>
<th>Posttest -- 101 WPM, 2 errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most difficult passage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Next most difficult passage</td>
<td></td>
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</tr>
</tbody>
</table>
A School-based, treatment control study of 40 students

60% Free and reduced lunch
Mean Age 12 years (range 11-14)
45% White, 45% Black, 10% other
53% in special education
Received 94-108 hours (mean=100) hours of instruction
Intervention provided in groups of 4-5
Remedial Methods: Spell Read P.A.T.
Mean Word Identification Score = 83
Children begin with word level skills around 10th percentile
A Brief Description of the Spell/Read P.A.T. program

Distribution of activities in a typical 70 minute session:

40 minutes -- Phonemic awareness/phonics

20 minutes -- shared reading

7 minutes -- writing about what was read

3 minutes -- wrap up

Systematic instruction in phonic elements beginning with mastery of 44 phonemes at single syllable level through multi-syllable strategies. Fluency oriented practice from beginning of instruction. Discussion and writing to enhance comprehension.
Outcomes from 100 Hours of Small Group Intervention--Spell Read

Word Attack: 111
Text Reading Accuracy: 96
Reading Comp.: 96
Text Reading Rate: 79

Standard Score

30%
Disparity in outcomes for rate vs. accuracy in five remediation studies

Accuracy
Rate

Beginning level of Word Identification Skill
Our current hypothesis about the difficult fluency gap

Children who struggle initially in learning to read miss out on many hundreds of thousands of opportunities to learn to recognize individual words because they read inaccurately and they don’t read very much.

By the time they reach 3-4 grade, their “sight word vocabulary” is severely restricted compared to good readers of their same age.

A very important factor in determining how fluently a child will read a passage involves the proportion of words in the passage the child can recognize by sight.
These are interesting and challenging times for anyone whose professional responsibilities are related in any way to literacy outcomes among school children. For, in spite of all our new knowledge about reading and reading instruction, there is a widespread concern that public education is not as effective as it should be in teaching all children to read.
Our current hypothesis about the difficult fluency gap

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After they become more accurate readers, there is still a huge gap in the number of words they can recognize by sight. They can’t catch up with their peers because 4th and 5th grade good readers are continuing to add words to their sight vocabulary at a very fast rate.
Projected growth in “sight vocabulary” of normal readers and disabled children before and after remediation.
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Unless poor readers who have received strong remediation can add words to their “sight vocabulary” at a faster rate than their peers, the “fluency gap” will continue.
What happens to accuracy and fluency of reading scores when children receive powerful preventive instruction?
Disparity in outcomes for rate vs. accuracy in remediation and prevention studies

Beginning level of Word Identification Skill

Accuracy
Rate
4th grade
2nd grade
2nd grade
Prev 1
Prev 2
30th

Standard Score

2nd
10th
10th
Prev 1
Prev 2
30th
Summary and qualification:

Older children with reading disabilities can be successfully taught to become more accurate and independent readers.

As with younger children, the focus of intervention must depend on the critical reading skills that are most deficient.

With skillful instruction of sufficient intensity, we should expect rapid acceleration of relative reading accuracy, but less rapid acceleration of reading fluency–comprehension attainments will depend partially on existing language comprehension skills and knowledge.
A final concluding thought....

There is no question but that “leaving no child behind in reading” is going to be a significant challenge...

It will involve professional development for teachers, school reorganization, careful assessments, and a relentless focus on the individual needs of every child...

But, its not the most difficult thing we could be faced with...
Thank You