Effective Interventions for Older Students With Reading Disabilities: Lessons From Research

Dr. Joseph K. Torgesen
Florida State University and
Florida Center for Reading Research

Council for Exceptional Students, April, 2005, Baltimore
To every complex problem, there is a simple solution...

*that doesn’t work.*

*Mark Twain*
We are going to have to work both harder and smarter before we are successful.

We need improvements in:

1. State level policies and support
2. District level support and organization
3. School organization, scheduling, and management
4. Quality and consistency of classroom instruction
5. Intervention systems and supports

All parts of our very complex school/instructional systems need to work together much more effectively.
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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.
Thinking about the challenge of providing remedial instruction sufficiently powerful to “close the gap” for older struggling readers

President’s commission on special education.

“The ultimate test of the value of special education is that, once identified, children close the gap with their peers.”

What is the nature of the gap we are trying to close?
Reading is a multifaceted skill, gradually acquired over years of instruction and practice.

The Many Strands that are Woven into Skilled Reading
(Scarborough, 2001)

BACKGROUND KNOWLEDGE
VOCABULARY KNOWLEDGE
LANGUAGE STRUCTURES
VERBAL REASONING
LITERACY KNOWLEDGE

LANGUAGE COMPREHENSION

WORD RECOGNITION
PHON. AWARENESS
DECODING (and SPELLING)
SIGHT RECOGNITION

Skilled Reading—fluent coordination of word reading and comprehension processes

increasingly strategic

increasingly automatic
A study of one State’s accountability measure of reading comprehension

Gave 2 hour battery of language, reading, nonverbal reasoning, and memory tests to approximately 200 children in each grade (3rd, 7th, and 10th) at 3 locations in the state

**Language** – Wisc Vocab and Similarities
  - Listening comprehension with FCAT passage

**Reading** – Oral reading fluency, Decoding Fluency

**NV Reasoning** – Wisc Matrix Reasoning, Block Design

**Working Memory** – Listening span, Reading Span
A couple of important points about the FCAT

It requires students to read relatively long passages before asking them to answer questions. This places special demands on reading fluency.

Passage length at different levels
- 3rd grade – 325 words
- 7th grade – 816 words
- 10th grade – 1008 words

The percentage of questions requiring “complex thinking skills” increases from 30% in 3rd to 70% in 10th grade
 percent of variance accounted for

Fluency
Verbal
Non Verbal
Memory

3rd Grade

55
47
23
12

3rd Grade
Fluency

Verbal

Non Verbal

Memory

Percent of variance accounted for

7th Grade
Demands for verbal knowledge stronger

Lowest students were reading about 130 words per minute.
What skills are particularly deficient in level 1 and level 2 readers at 7th grade?

<table>
<thead>
<tr>
<th>Skill/ability</th>
<th>FCAT Performance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>WPM on FCAT</td>
<td>88</td>
</tr>
<tr>
<td>Fluency percentile</td>
<td>7th</td>
</tr>
<tr>
<td>Phonemic decoding</td>
<td>27th</td>
</tr>
<tr>
<td>Verbal knowledge/reasoning</td>
<td>34th</td>
</tr>
</tbody>
</table>
Read the article “Lightning” before answering Numbers 9 through 16.

Lightning

By Sandra Markle

The puffy, cumulus cloud begins to billow up. The top spreads into an anvil head as the cloud thickens and darkens, becoming a cumulonimbus cloud. The wind begins to blow harder, and raindrops pelt the ground. Then, suddenly, a jagged streak of light slices across the sky. Thunder cracks explosively and trails off into a deep rumble. It’s a thunderstorm, and that lightning bolt was only one of six hundred flashes that occur somewhere in the world every second. Of these, about one hundred strike the earth. Lightning is misunderstood, underrated as a dangerous phenomenon, and unappreciated for the important way it helps the environment.

In 1752 Ben Franklin proved that lightning was electricity. He launched a kite with a metal rod at its tip into a cumulonimbus cloud. The kite string was silk, a very good conductor of electricity, and when the lightning flashed, Franklin touched the metal key tied to the string. The results were shocking. An average bolt of lightning packs more than fifteen million volts of electricity—enough to light one million light bulbs.

Today scientists know that what happens in a cumulonimbus cloud is similar to what happens when you scuff across a wool carpet and touch something, getting a shock. You may even see a spark, a miniature lightning bolt, when this happens. All matter is made up of tiny atoms, and atoms are made up of even tinier negatively and positively charged particles. When friction knocks the negatively charged particles free, they collect on objects. Like opposite poles of a magnet, the opposite charges attract.

Strong updrafts of warm air into colder air batter water droplets, causing the cloud to become electrified. Particles with a positive charge collect in the highest layers. Negatively charged particles collect in the lower portion of the cloud. As a thunderstorm approaches, these negative charges set up an attraction with positive charges on the ground.

At first the air acts as an insulator, preventing charged particles from leaping between the earth and the cloud. Eventually the attraction becomes too great. An invisible finger of negatively charged particles shoots down from the cloud, seeking the quickest
path to the ground. Then the positively charged particles leap up to meet the negative charges, forming an electrified channel that may be as thin as a wire or as thick as a cable. Lightning appears to shoot down from the sky, but slow-motion photography has proved that the bolt actually illuminates from the ground up.

All of this action lasts only a fraction of a second, but the surge of power generates a burst of heat. The explosive expansion of superheated air creates sound waves—thunder. Since lightning travels at the speed of light—about 186,000 miles per second (300,000 kilometers per second)—and sound travels only 1 mile (1.6 kilometers) in five seconds, it really is possible to estimate how many miles (kilometers) away a storm is. Count the number of seconds between the time you see the lightning flash and when you first hear the crack of thunder. Then divide this by five. This will tell you how many miles away the storm is. Multiply the number of miles by 1.6 to find out how many kilometers this represents.

Thunderstorms happen most frequently during the spring and summer because it is then that the Earth’s heat is most uneven. If you live on the island of Java, you have a lot of opportunities to practice figuring how far away the storm is. Lightning flashes there about three hundred days a year. Florida is the most lightning-prone state in the United States, averaging two thunderstorms a week.

Although lightning may seem to be gone in a flash, it does have an important long-lasting effect. Plants need nitrogen to grow. While there is plenty of it in the air, plants can’t use it in this gaseous form. Lightning causes the gaseous nitrogen to form nitrogenous compounds that are carried to the soil by the rain. So the next time there is a thunderstorm with plenty of lightning, notice whether the grass and other plants in your neighborhood seem to have a sudden growth spurt after the storm. It isn’t just the rain. The lightning provided a natural dose of fertilizer.
13 Why is a thunderstorm with more lightning better for growing plants than one with less lightning?
   A. Lightning occurs most frequently in overgrown areas.
   B. The heat from lightning causes a growth spurt in plants.
   C. The energy from lightning striking the earth is very powerful.
   D. Lightning changes nitrogen in the air to a form plants can use.

14 Which kind of evidence does the author use most in this article?
   F. She provides scientific facts about lightning.
   G. She relates her personal experiences with lightning.
   H. She gives her opinions about heat generated by thunder.
   I. She relies on the reader’s common knowledge of thunderstorms.
Big Points:

Individual differences among students in broad verbal knowledge and reasoning skills become an increasingly important factor explaining differences in performance on measures of comprehension of complex text as we go from grades three to ten.

A lot of the growth required to maintain grade level skills in reading from grade 3 to 10 is growth in general cognitive, or intellectual ability and knowledge.
Big Points amplified:

To maintain grade level reading skills between 3 and 10, students must:

Learn to recognize many thousands of new words “by sight” in order to maintain fluency
The report of the National Research Council pointed out that these concerns about literacy derive not from declining levels of literacy in our schools but rather from recognition that the demands for high levels of literacy are rapidly accelerating in our society.
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.
One interesting fact and one interesting estimate:

Printed school English (through 8th grade) contains around 88,500 distinct word families (persecute, persecution, persecutor, persecuting)

The average fifth grader encounters around 10,000 new words per year.
Big Points amplified:

To maintain grade level reading skills between 3 and 10, students must:

Learn to recognize many thousands of new words “by sight” in order to maintain fluency
Learn the meaning of many thousands of new words
Grow in knowledge of the world and how it works
Improve their thinking and reasoning skills
Learn to utilize more complex reading strategies
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Grow in knowledge of the world and how it works
Improve their thinking and reasoning skills
Learn to utilize more complex reading strategies

In middle and high school, reading can be increasingly defined as “thinking guided by print.”
Primary Characteristics of Struggling Readers in Middle and High School

They are almost always less fluent readers—sight word vocabularies many thousands of words smaller than average readers.

Usually know the meanings of fewer words.

Usually have less conceptual knowledge.

Are almost always less skilled in using strategies to enhance comprehension or repair it when it breaks down.
Teaching Reading is Urgent

A student at the 10th percentile reads about 60,000 words a year in 5th grade.

A student at the 50th percentile reads about 900,000 words a year in 5th grade.

Average students receive about 15 times as much practice in a year.

<table>
<thead>
<tr>
<th>Percentile Rank</th>
<th>Minutes Per Day</th>
<th>Words Read Per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Books</td>
<td>Text</td>
</tr>
<tr>
<td>98</td>
<td>65.0</td>
<td>67.3</td>
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<tr>
<td>90</td>
<td>21.2</td>
<td>33.4</td>
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<tr>
<td>80</td>
<td>14.2</td>
<td>24.6</td>
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<tr>
<td>70</td>
<td>9.6</td>
<td>16.9</td>
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<td>60</td>
<td>6.5</td>
<td>13.1</td>
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<td>50</td>
<td>4.6</td>
<td>9.2</td>
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<tr>
<td>40</td>
<td>3.2</td>
<td>6.2</td>
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<td>30</td>
<td>1.8</td>
<td>4.3</td>
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<tr>
<td>20</td>
<td>0.7</td>
<td>2.4</td>
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<tr>
<td>10</td>
<td>0.1</td>
<td>1.0</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
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</table>

(Anderson, R. C., 1992)
Closing the gap in middle and high school: the fundamental challenge

Each year, the demands of text become more challenging
“Clifford loves to go visiting. When he visits his sister in the country, he always calls ahead. Clifford always arrives on time. Don’t be late. Knock before you walk in. He knocks on the door before he enters. He wipes his feet first. Wipe your feet. Clifford kisses his sister. He shakes hands with her friend. Shake hands. Wash up before you eat. Clifford’s sister has dinner ready. Clifford washes his hands before he eats. Clifford chews his food with his mouth closed. He never talks with his mouth full. Don’t talk with your mouth full. Help clean up. Clifford helps with the clean-up. Say good-bye. Then he says thank you and good-bye to his sister and to his friend. Everyone loves Clifford’s manners” -- Norman Bridwell - *Clifford’s Manners*
Just what Tom’s thoughts were, Ned, of course, could not guess. But by the flush that showed under the tan of his chum’s cheeks the young financial secretary felt pretty certain that Tom was a bit apprehensive of the outcome of Professor Beecher’s call on Mary Nestor. “So he is going to see her about something important, Ned?” “That’s what some members of his party called it.” “And they’re waiting here for him to join them?” “Yes, and it means waiting a week for another steamer. It must be something pretty important, don’t you think, to cause Beecher to risk that delay in starting after the idol of gold?” “Important? Yes, I suppose so,” assented Tom. – Victor Appleton, *Tom Swift in the Land of Wonders*
Pierre had been educated abroad, and this reception at Anna Pavlovna’s as the first he had attended in Russia. He knew that all the intellectual lights of Petersburg were gathered there and, like a child in a toyshop, did not know which way to look, afraid of missing any clever conversation that was to be heard. Seeing the self-confident and refined expression on the faces of those present, he was always expecting to hear something very profound. At last he came to Mono. Here the conversation seemed interesting and he stood waiting for an opportunity to express his own views, as young people are fond of doing – Leo Tolstoy  War and Peace
A lesson about increasing text difficulty from recent fluency norms

Mean Words Per Minute in Fall, Winter, Spring

<table>
<thead>
<tr>
<th></th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>6th Grade</td>
<td>125</td>
<td>139</td>
<td>149</td>
</tr>
<tr>
<td>7th Grade</td>
<td>129</td>
<td>138</td>
<td>150</td>
</tr>
<tr>
<td>8th Grade</td>
<td>133</td>
<td>144</td>
<td>150</td>
</tr>
</tbody>
</table>

Tindal, Hasbrouck, Jones, 2005
Closing the gap in middle and high school: the fundamental challenge

Each year, the demands of text become more challenging

- New words appear for the first time
- Sentences become longer and more complex
- Correct interpretation requires a broader range of knowledge
- The length of what you are expected to read increases

How do you “close the gap” when the requirements for “grade level proficiency” increase every year?
Projected growth in “sight vocabulary” of normal readers and struggling readers before and after remediation.
Improving reading skills in middle and high school

1. Intensify our efforts to prevent reading difficulties in the first place

2. Be sure we have powerful remedial programs in place in 4th and 5th grade

3. Offer a continuum of intensity in reading instruction while also improving the contribution of content area teachers to literacy growth.
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
Diagnostic decision tree for students who perform below standards on a measure of reading comprehension in 3rd Grade or later

TOWRE Sight Word Efficiency
(45 second subtest)

Scores at or below 39th%ile (for student’s grade level)

TOWRE Phonemic Decoding
(45 second subtest)

Above 39th%ile

At or below 39th%ile

CTOPP
(Elision subtest)

Above 39th%ile

At or below 39th%ile

Intensive instruction in phonics based program

Needs phonics based program that explicitly addresses phonemic awareness (not assumes)

Scores above 39th%ile (for student’s grade level)

Stanford Diagnostic Reading Test or Group Reading Assessment and Diagnostic Evaluation
(vocab and comprehension subtests)

Above 39th%ile

At or below 39th%ile

QRI-3
Identify independent/instructional reading levels; Diagnose reading/thinking strategies


Test taking strategies Higher order questioning Practice writing extended responses citing support from text
The side of the tree for students with word reading difficulties

At or below the 39th percentile on a measure of word reading accuracy and fluency

TOWRE test of phonemic decoding efficiency (45 secs.)

Above 39th %

Build fluency

CTOPP Elision Subtest

At or below 39th %

Above 39th %

Intensive instruction in phonics based program

Needs phonics based program that builds PA, not assumes it
The side of the tree for students with word level skills above the 39th percentile

**Stanford Diagnostic Reading Test** or **Group Reading Assessment and Diagnostic Evaluation**
(vocab and comprehension subtests)

**Above 39th %**
- Test taking strategies
- Higher order questioning
- Practice writing extended responses citing support from text

**At or below 39th %**
- **QRI-3**
  - Identify independent/instructional reading levels; Diagnose reading/thinking strategies
- Build background knowledge
- Teach vocabulary
- Teach comprehension strategies
1. Schedule a **three hour block** every day for students with reading skills more than two years below grade level with word level difficulties

   - **Word level skills** - accuracy and fluency
   - **Strategy instruction and engagement in thinking about text**
   - **Both embedded and systematic vocabulary instruction**
   - **Lots of guided, supported practice in reading**
What do we know about the effectiveness of 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 or 6\textsuperscript{th} 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
Time x Activity Analyses for the Two Intervention Approaches

<table>
<thead>
<tr>
<th>Activity</th>
<th>LIPS</th>
<th>EP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonemic Awareness and Phonemic Decoding</td>
<td>85%</td>
<td>20%</td>
</tr>
<tr>
<td>Sight Word Instruction</td>
<td>10%</td>
<td>30%</td>
</tr>
<tr>
<td>Reading or writing connected text</td>
<td>5%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Growth in Total Reading Skill Before, During, and Following Intensive Intervention

Interval in Months Between Measurements

Standard Score

LIPS

EP
Growth in phonemic decoding during intervention & follow-up

- LIPS
- EP

Standard Score

Pretest  posttest  1 year  2 years
Growth in text reading accuracy during intervention & follow-up

Standard Score

Pretest  posttest  1 year  2 years

LIPS

EP
Growth in comprehension during intervention & follow-up
Growth in fluency during intervention & follow-up

- LIPS
- EP

Standard Score

Pretest posttest 1 year 2 years

60 70 80 90 100
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>Most difficult passage</th>
<th>Prestest -- 38 WPM, 10 errors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Posttest -- 101 WMP, 2 errors</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Next most difficult passage</th>
<th>Pretest -- 42 WPM, 6 errors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Posttest -- 104 WPM, 1 error</td>
</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**: Standard Score 111
- **Text Reading Accuracy**: Standard Score 96
- **Reading Comp.**: Standard Score 96
- **Text Reading Rate**: Standard Score 79

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

Beginning level of Word Identification Skill
Projected growth in “sight vocabulary” of normal readers and struggling readers before and after remediation.
Improving reading skills in middle and high school

1. Schedule a 90 minute block every day for other students reading below grade level

   Word level skills- fluency

   Strategy instruction and engagement in thinking about text

   Both embedded and systematic vocabulary instruction

   Lots of guided, supported practice in reading
The Content Literacy Continuum

1. Intensive remedial work for students with serious reading difficulties
2. More powerful instruction in the content areas so that all children learn essential content—even poor readers
3. Embedded instruction in strategies for learning and performance—content teachers

http://smarttogether.org/clc/index.html
Thinking About Critical Content

Knowledge
Thinking About the Curriculum...

Knowledge
Thinking About the Curriculum...

Knowledge

Critical Content

Course
Content Enhancement Teaching Routines

Planning and Leading Learning
Course Organizer
Unit Organizer
Lesson Organizer

Teaching Concepts
Concept Mastery Routine
Concept Anchoring Routine
Concept Comparison Routine

Explaining Text, Topics, and Details
Framing Routine
Survey Routine
Clarifying Routine

Increasing Performance
Quality Assignment Routine
Question Exploration Routine
Recall Enhancement Routine
“If it weren’t for students impeding our progress in the race to the end of the term, we certainly could be sure of covering all the content.”

However, the question should not be whether we are covering the content, but whether students are with us on the journey.”  Pat Cross

“Give me a fish while you’re teaching me how to catch my own. That way I won’t starve to death while I’m learning to tie flies.”
## Learning Strategies Curriculum

<table>
<thead>
<tr>
<th>Acquisition</th>
<th>Storage</th>
<th>Expression of Competence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word Identification</td>
<td>First-Letter Mnemonic</td>
<td>Sentences</td>
</tr>
<tr>
<td>Paraphrasing</td>
<td>Paired Associates</td>
<td>Paragraphs</td>
</tr>
<tr>
<td>Self-Questioning</td>
<td>Listening/Notetaking</td>
<td>Error Monitoring</td>
</tr>
<tr>
<td>Visual Imagery</td>
<td>LINCS Vocabulary</td>
<td>Themes</td>
</tr>
<tr>
<td>Interpreting</td>
<td></td>
<td>Assignment Completion</td>
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<tr>
<td>Visuals</td>
<td></td>
<td>Test-Taking</td>
</tr>
<tr>
<td>Multipass</td>
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</tbody>
</table>

- **Acquisition**: Techniques for acquiring information and developing understanding.
- **Storage**: Methods for retaining and organizing learned material.
- **Expression of Competence**: Applications of learning strategies in various contexts.
Increasing comprehension and critical examination of meaning in every child

“Questioning the Author”

Done with whole classes or in small groups

Done by every subject matter teacher or by specialists

Done consistently throughout the year, not necessarily every day or throughout the entire lesson
The basic purpose of Questioning the Author is to make public the processes of comprehension.

Essential features:

1. It treats text as the product of a fallible author, as "someone’s ideas written down."
Dr. Isabel Beck introducing Questioning...
The basic purpose of Questioning the Author is to make public the processes of comprehension.

Essential features:

1. It treats text as the product of a fallible author, as "someone’s ideas written down."

2. It deals with text through general teacher-posed questions such as "What is the author trying to say?" or "What do you think the author means by that?"
The role of queries in Questioning the Author
The basic purpose of Questioning the Author is to make public the processes of comprehension.

**Essential features:**

1. It treats text as the product of a fallible author, as “someone’s ideas written down.”

2. It deals with text through general teacher-posed questions such as “What is the author trying to say?” or “What do you think the author means by that?”

3. It takes place on-line, in the context of reading as it initially occurs.

4. It encourages discussion in which students are urged to grapple with ideas in the service of constructing meaning.
More teacher techniques in Q the A...
What can we reasonably expect from effective interventions with older students:

We can expect to have a relatively strong effect on their reading accuracy.

We can expect a relatively strong effect on reading comprehension in situations where the passages are not too long, or there are not significant time constraints.

We should not expect a dramatic effect on relative fluency over the short-term.
A comprehensive literacy solution for middle and high school

1. Remember that the thinking and knowledge demands for literacy increase every year

Content area teachers must teach content more powerfully, and they must help students think about text more effectively

2. Remember the most struggling readers are far behind their peers in many areas

Teach them reading skills as intensively and skillfully as you can manage
A very recent report on “what works” with middle and high schools students.

Contains a 15 point research-based “action plan” for middle and high schools

Download at:

http://www.all4ed.org/publications/ReadingNext/ReadingNext.pdf
Reading Next: Two kinds of action items

**Instructional**

1. Direct, explicit comprehension instruction
2. Effective instruction embedded in content areas
3. Motivation and self-direction
4. Text-based collaborative learning
5. Strategic tutoring-intensive
6. Diverse Texts
7. Intensive Writing
8. A technology component
9. Ongoing formative assessment
Infrastructure improvements

- Extended time for literacy-2-4 hours across day
- Professional Development
- Ongoing summative assessment of students and programs
- Teacher teams
- Leadership
- A comprehensive and coordinated literacy program
Is it really possible to substantially improve the reading skills of struggling readers after elementary school?

The greatest danger for most of us is not that our aim is too high and we miss it, but that it is too low and we reach it.

Michelangelo
Thank You

www.fcrr.org

Science of reading section