

Factors that influence Reading Comprehension: Developmental and Instructional Considerations

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Definitions of Reading Comprehension

“intentional thinking during which meaning is constructed through interactions between text and reader.” Durkin (1993)

“the construction of the meaning of a written text through a reciprocal interchange of ideas between the reader and the message in a particular text.” Harris & Hodges, 1995

meaning arises from the deliberate thinking processes readers engage in as they read.

Definitions of Reading Comprehension

“reading comprehension is thinking guided by print”

Perfetti 1995

“the process of simultaneously extracting and constructing meaning through interaction and involvement with written language. It consists of three elements: the reader, the text, and the activity or purpose for reading”

Rand Reading Study Group, 2002

What skills and knowledge are most critical for 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.

Knowledge of test structure and genre

Reasoning and inferential skills

Motivation to understand and interest in task and materials

Interesting questions about the relative contributions of these factors to performance on tests of reading comprehension

Do their relative contributions vary across different types of reading comprehension measures?

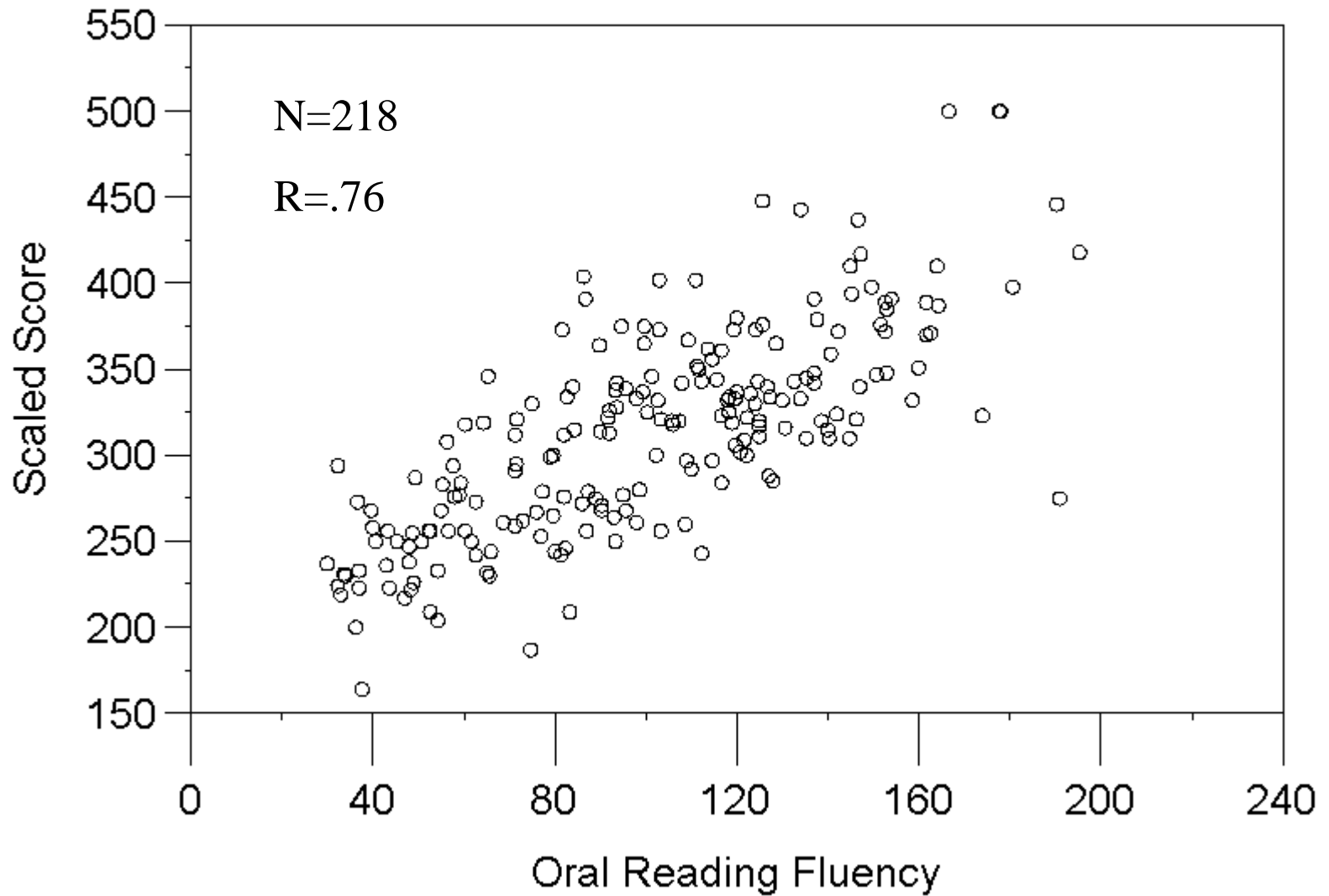
Do their relative contributions vary depending on level (i.e. grade level) of reading proficiency being assessed?

Correlations between oral reading fluency and comprehension range from about .50 to .90, with most falling around .70.

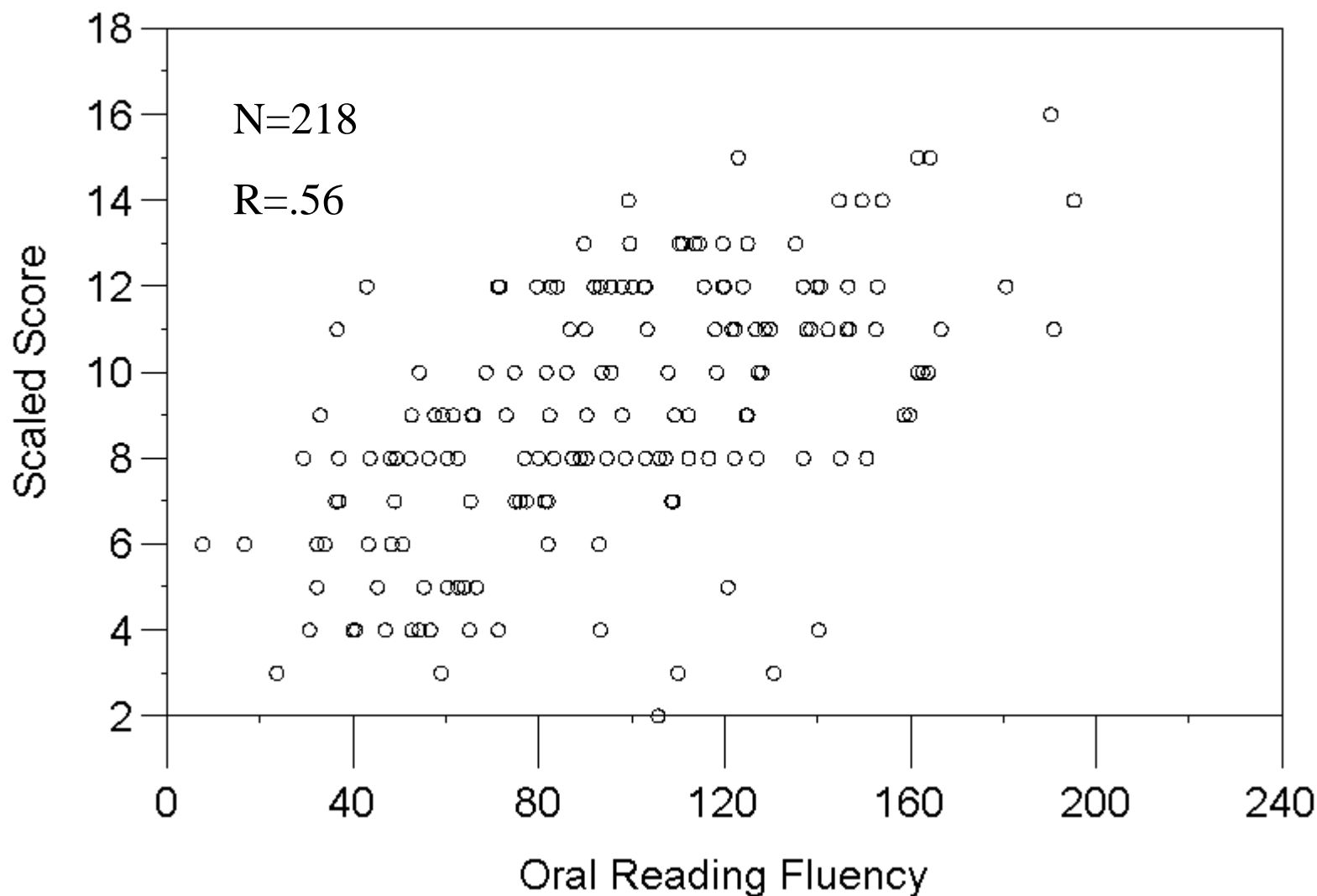
However, the strength of the relationship depends upon such things as:

- The measure of reading comprehension

Scatterplot of FCAT Reading and Fluency: Third Grade



Scatterplot of GORT Comprehension and Fluency: Third Grade



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The strength of the relationship depends upon such things as:

The measure of reading comprehension

Age/grade level of students – r with SAT10

1st grade $r = .79$

2nd grade $r = .70$

3rd grade $r = .69$

What about changes across a much longer developmental span?

A study of the Florida Comprehensive Assessment Test (FCAT) at grades 3, 7, and 10

What types of reading and language/knowledge factors are most important for good performance on the FCAT at grades 3, 7, and 10

What reading and language/knowledge factors are most deficient in students who perform below grade level on the FCAT?

The FCAT has some important characteristics

It was specifically created to place high demands on vocabulary and reasoning/inferential skills

“FCAT demands an in-depth understanding and application of information that is not typical of most standardized tests.” (*Lessons Learned*, 2002)

Design specifications call for “application of skills in cognitively challenging situations.”

Proportion of questions requiring “higher order” thinking skills increases from 30% in grade three to 70% in grade 10

The FCAT has some important characteristics

The FCAT may also place special demands on reading fluency, as opposed to “labored accuracy”

Passage length at different levels

3rd grade – 325 words

7th grade – 816 words

10th grade – 1008 words

How the study was conducted:

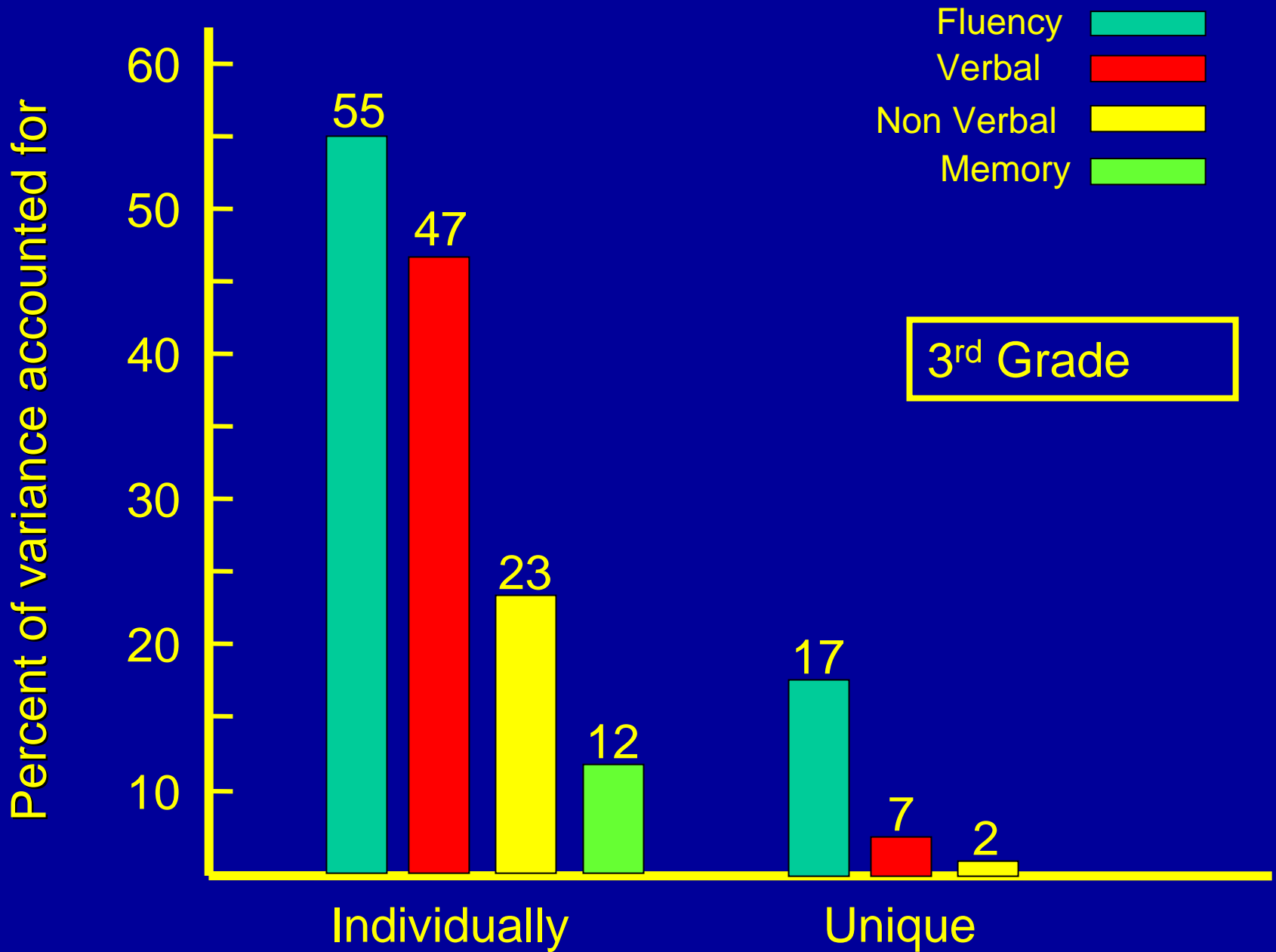
Gave 2 hour battery of language, reading, nonverbal reasoning, and memory tests to approximately 200 children in each grade (3rd, 7th, and 10th) at 3 locations in the state

Language – Wisc Vocab and Similarities
Listening comprehension with FCAT passage

Reading– Oral reading fluency, TOWRE, Gray Oral Reading Test

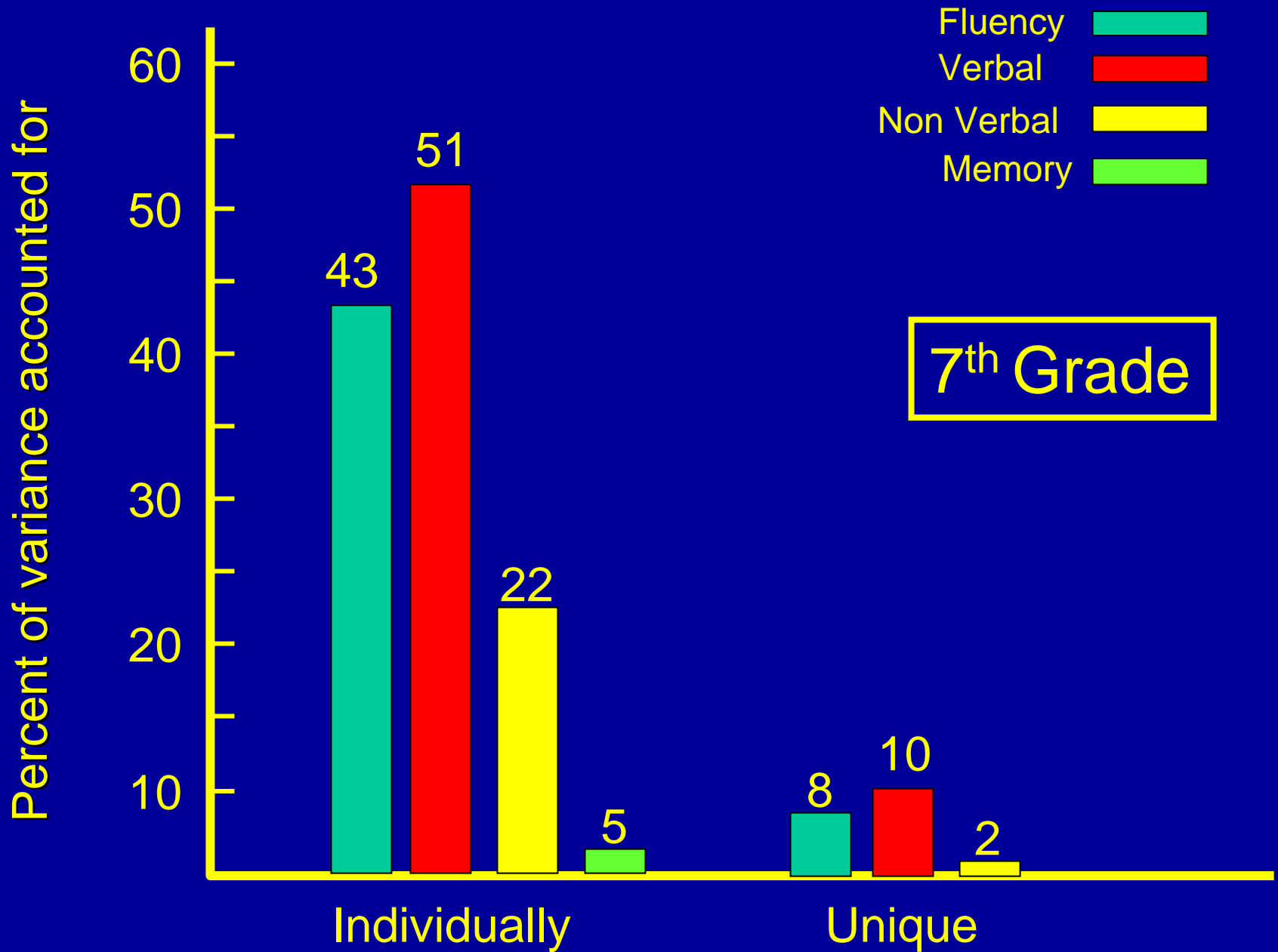
NV Reasoning – Wisc Matrix Reasoning, Block Design

Working Memory– Listening span, Reading Span



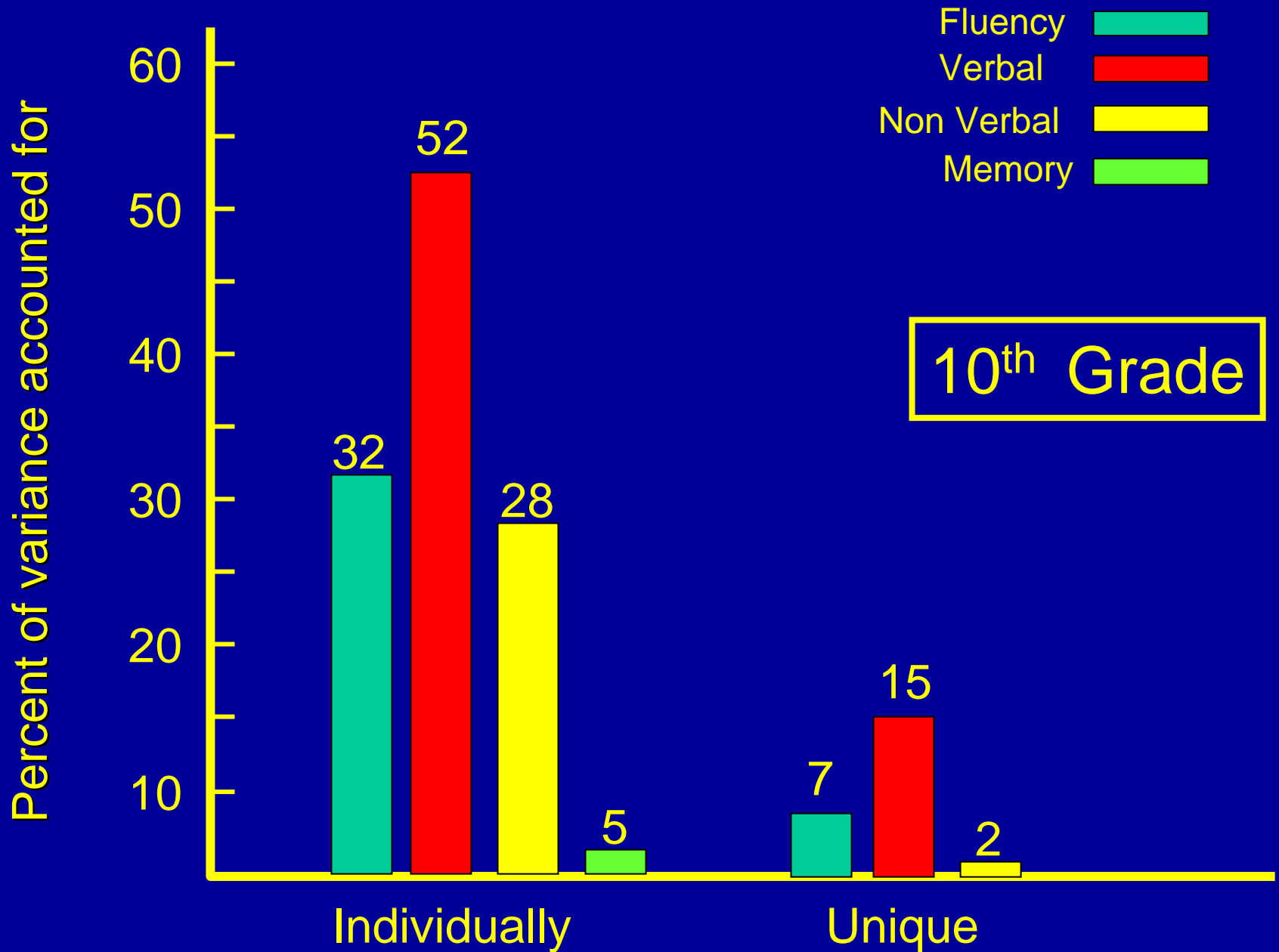
What skills are particularly deficient in level 1 and level 2 readers in 3rd grade?

<u>Skill/ability</u>	<u>FCAT Performance Level</u>				
	1	2	3	4	5
WPM on FCAT	54	92	102	119	148
Fluency percentile	6 th	32 th	56 th	78 th	93 rd
Phonemic decoding	25 th	45 th	59 th	74 th	91 st
Verbal knowledge/ reasoning	42 nd	59 th	72 nd	91 st	98 th



What skills are particularly deficient in level 1 and level 2 readers at 7th grade?

<u>Skill/ability</u>	<u>FCAT Performance Level</u>				
	1	2	3	4	5
WPM on FCAT	88	113	122	144	156
Fluency percentile	7 th	25 th	45 th	82 th	95 th
Phonemic decoding	27 th	53 rd	53 rd	74 th	84 th
Verbal knowledge/ reasoning	34 th	45 th	64 th	88 th	93 rd



What skills are particularly deficient in level 1 and level 2 readers at 10th grade?

<u>Skill/ability</u>	<u>FCAT Performance Level</u>				
	1	2	3	4	5
WPM on FCAT	130	154	175	184	199
Fluency percentile	8 th	30 th	68 th	87 th	93 rd
Phonemic decoding	18 th	27 th	45 th	56 th	72 nd
Verbal knowledge/ reasoning	30 th	60 th	66 th	84 th	89 th

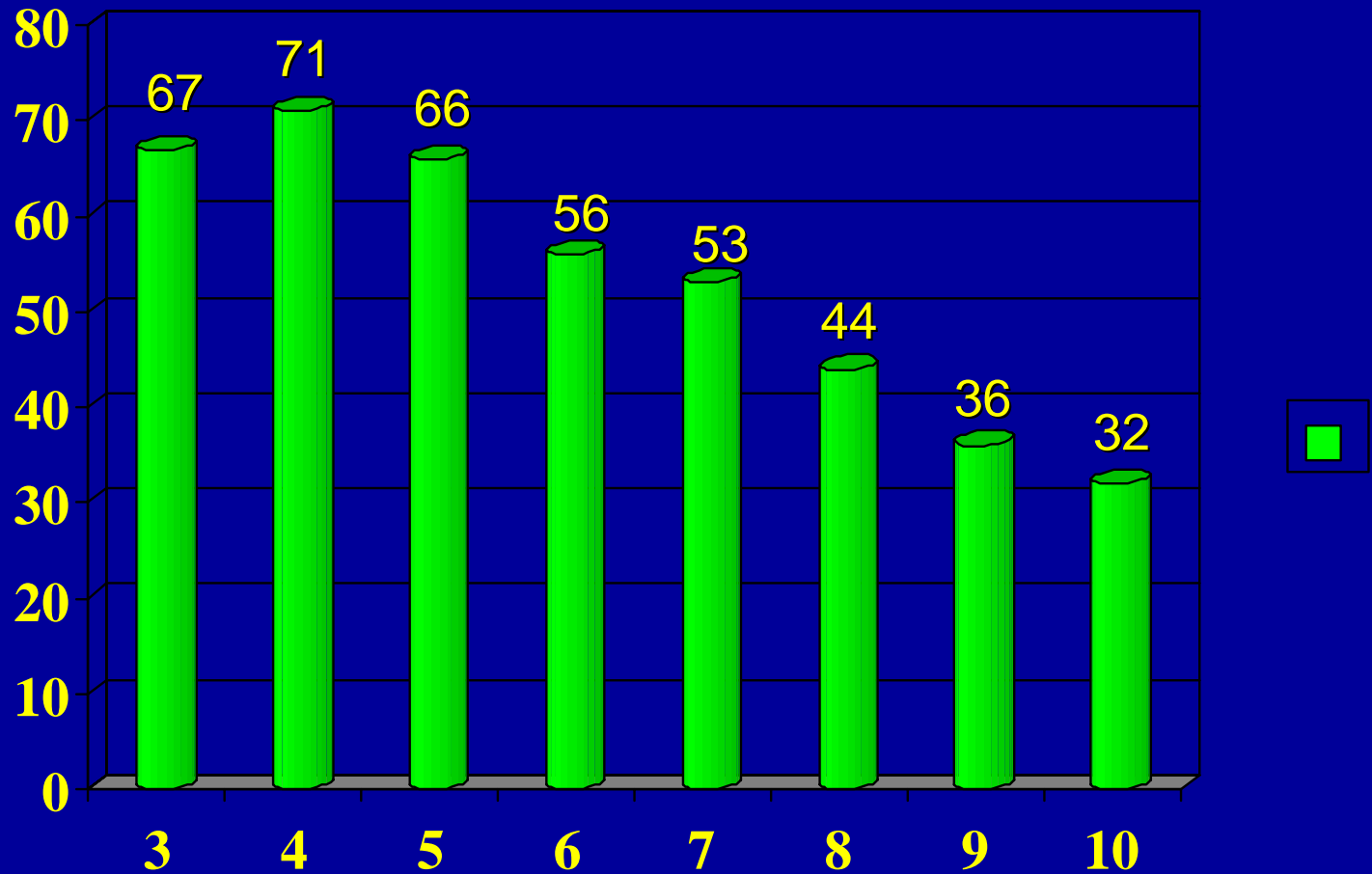
Most important Conclusions from the Study

1. The dominant factor in explaining individual differences in performance on the FCAT in grade 3 is oral reading fluency
2. The dominant factor in explaining individual differences in performance on the FCAT in grade 10 is verbal knowledge and reasoning ability.

Schatschneider, C., Buck, J., Torgesen, J.K., Wagner, R.K., Hassler, L., Hecht, S., & Powell-Smith, K. (2005). A multivariate study of factors that contribute to individual differences in performance on the Florida Comprehensive Reading Assessment Test. Technical Report # 5, Florida Center for Reading Research, Tallahassee, FL.

http://www.fcrr.org/TechnicalReports/Multi_variate_study_december2004.pdf

Percent of students at grade level or above from grades 3 through 10 in 2005

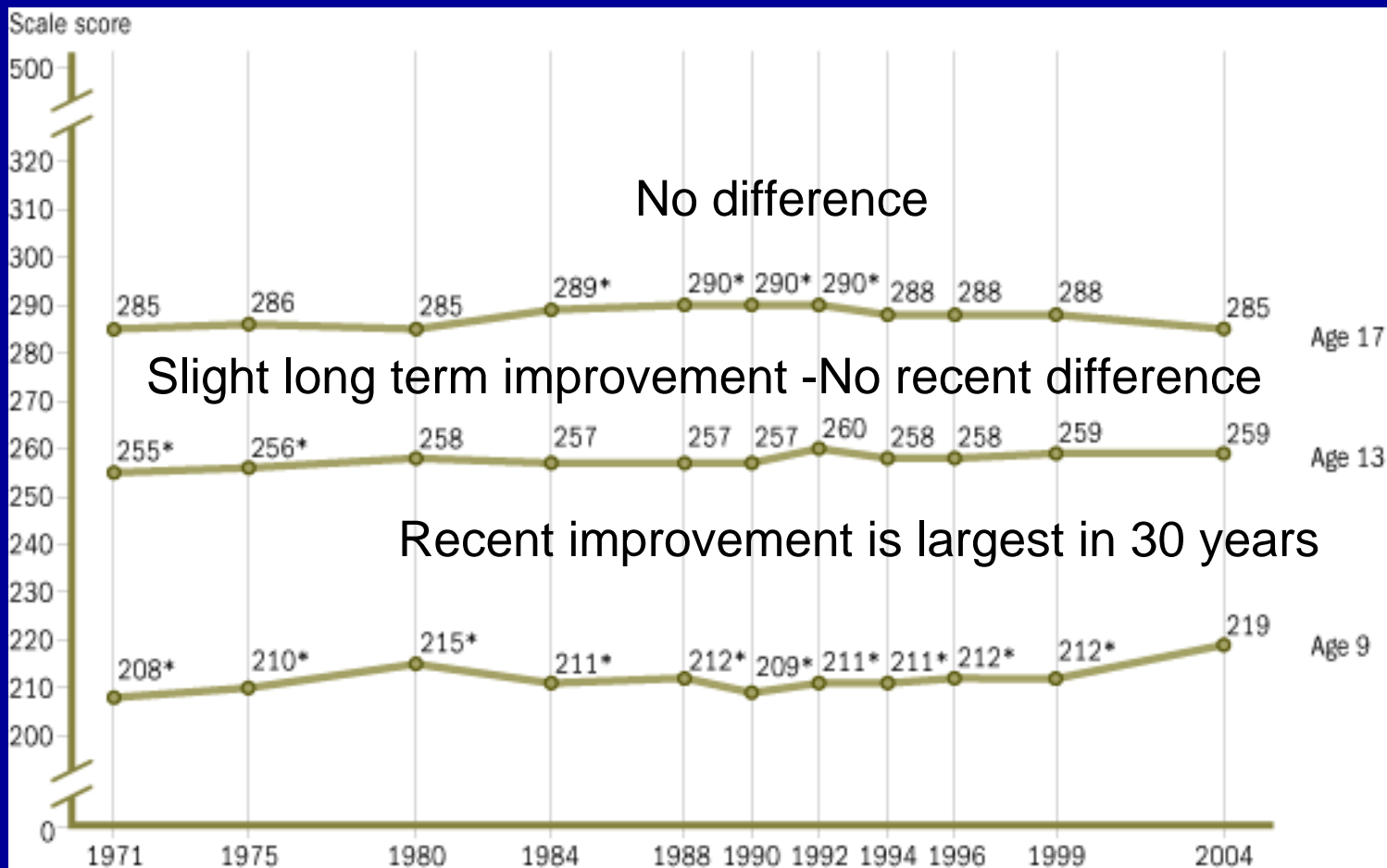


Instructional challenges...

1. Who is responsible for providing instructional support for the continued growth of literacy skills from 4th through 12th grades for students reading “at grade level?”
2. Who is responsible for providing instruction support for an overall increase reading proficiency from “adequate” to “proficient”

A positive outcome nationally....

Latest results from the National Assessment of Educational Progress



Even students who complete high school successfully at present are not prepared for many post secondary options

Comparing the difficulty of typical 11th and 12th grade texts with those encountered in college and other post secondary environments.

Estimates based on average Lexiles of text

Graduate Record Exam
(n=8)

University (13-14)
(n=100)

Community College
(n=50)

Workplace
(n=1401)

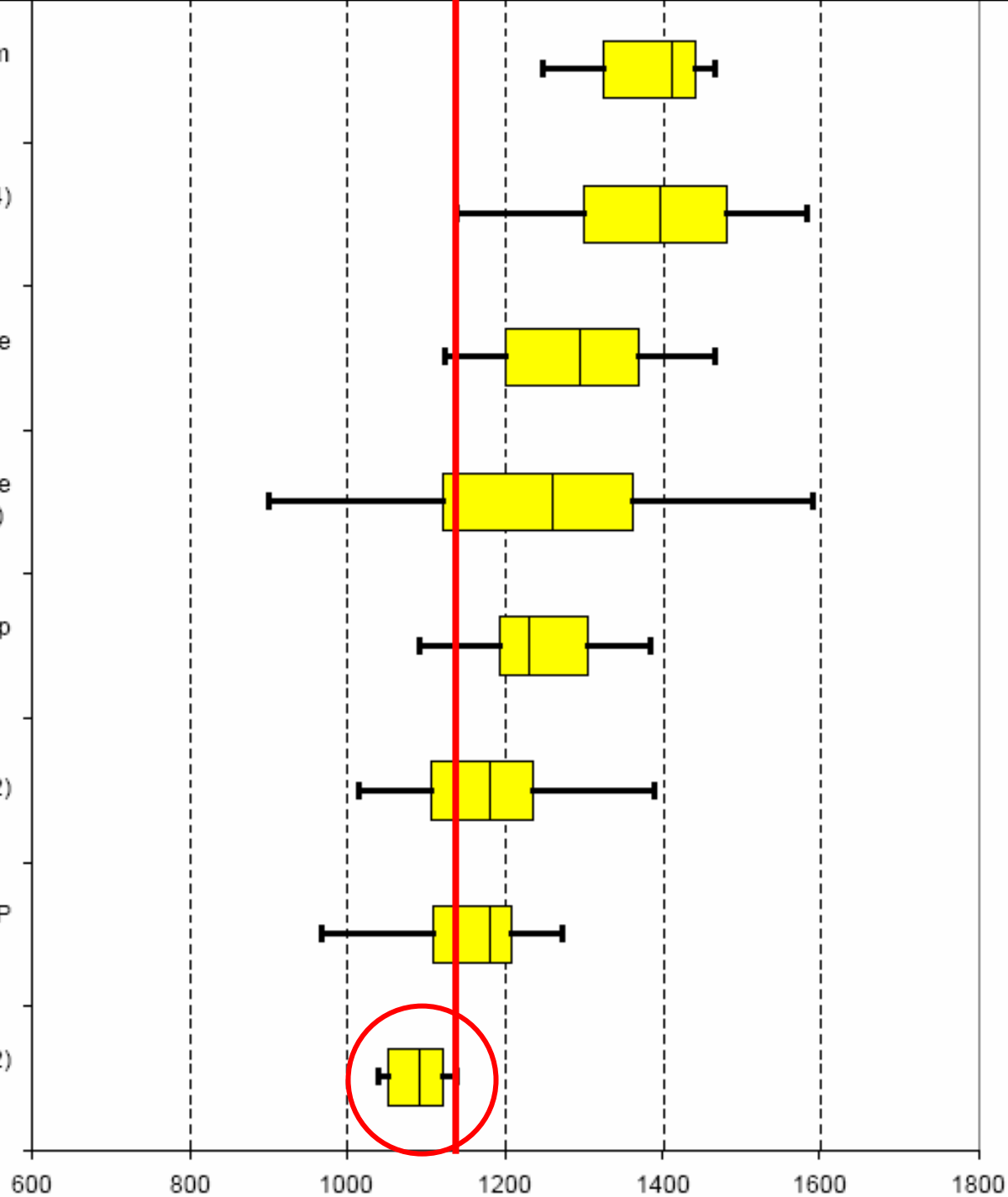
Citizenship
(n=54)

Military (n=22)

SAT I, ACT, AP
(n=20)

High School (11-12)
(n=23)

Text Collections



When all of this data is brought together, it is apparent that society in general and the workplace in particular demand higher levels of reading proficiency than schools. Moreover, many students are barely meeting those minimal education requirements.

(p. 3) -- Pennsylvania Department of Education
(2004)

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1. Who is responsible for providing instructional support for the continued growth of literacy skills from 4th through 12th grades for students reading “at grade level?”

Who is responsible for providing instruction support for an overall increase reading proficiency from “adequate” to “proficient”

Once we decide who is responsible, what will that instruction and support look like?

Two approaches to reading instruction for older students that acknowledge the important role of instruction within content areas to improve reading comprehension

The Content Literacy Continuum

Concept Oriented Reading Instruction

The Content Literacy Continuum

- Level 1:** **Enhance content instruction** (mastery of critical content for *all* regardless of literacy levels)
- Level 2:** **Embedded strategy instruction** (routinely weave strategies within *and* across classes using large group instructional methods)
- Level 3:** **Intensive strategy instruction** (mastery of specific strategies using 8-stage instructional sequence; individual Strategic Tutoring)
- Level 4:** **Intensive basic skill instruction** (mastery of entry level literacy skills at the 4th grade level)
- Level 5:** **Therapeutic intervention** (mastery of language underpinnings of curriculum content and learning strategies)

Enhanced instruction in critical content

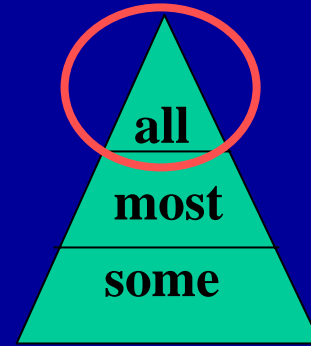
- ✓ Students with limited literacy skills typically do not acquire enough content knowledge to meet standards
- ✓ Comprehension will not show long term improvement for struggling readers unless content area background knowledge is improved.
- ✓ When students have limited literacy, core curriculum teachers must compensate for their limited skills in the ways that they present the core content.
- ✓ Traditional secondary teacher planning and instruction focuses on planning to cover more content quickly and the result is poor content area learning for all students.

Enhanced instruction in critical content (cont.)

- ✓ Secondary core curriculum teachers can promote literacy by focusing instructional time on critical content so that mastery is achieved and critical literacy skills and strategies can be embedded naturally during instruction.

Level 1: Insure mastery of critical content

All students learn critical content required in the core curriculum regardless of literacy levels.



Teachers compensate for limited literacy levels by using explicit teaching routines, adaptations, and technology to promote content mastery.

Content Enhancement Routines

- A way of teaching academically diverse classes in which
 - The integrity of the content is maintained
 - Critical content is selected and transformed
 - Content is taught in an active partnership with students

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

<http://smarttogether.org/clc/index.html>

“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.”

The Content Literacy Continuum

Level 1: **Enhance content instruction** (mastery of critical content for *all* regardless of literacy levels)

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Level 5: **Therapeutic intervention** (mastery of language underpinnings of curriculum content and learning strategies)

Level 2: Weave shared strategies across classes.

Teachers embed selected learning strategies in core curriculum courses through direct explanation, modeling, and required application in content assignments.

For example: All teachers teach the steps of a paraphrasing strategy (RAP), regularly model its use, and then embed paraphrasing activities in course activities through the year to create a culture of “reading to retell.”

Learning Strategies....

Teaching students how to think about and solve problems,
or.....teaching students “how to learn”

Learning Strategies Curriculum

<u>Acquisition</u>	<u>Storage</u>	<u>Expression of Competence</u>
Word Identification	First-Letter Mnemonic	Sentences
Paraphrasing	Paired Associates	Paragraphs
Self-Questioning	Listening/Notetaking LINCS Vocabulary	Error Monitoring
Visual Imagery		Themes
Interpreting Visuals		Assignment Completion
Multipass	http://smarttogether.org/clc/index.html	Test-Taking

Concept Oriented Reading Instruction

CORI

The Goal: Create a method of improving literacy skills that is highly engaging and effective in establishing use of comprehension strategies to increase reading comprehension

Premise:

“motivated students usually want to understand text content fully and therefore, process information deeply. As they read frequently with these cognitive purposes, motivated students gain in reading comprehension proficiency”

Four principles for creating engaged readers

- When content goals are prominent in reading, students focus on gaining meaning, building knowledge, and understanding deeply, rather than on skills and rewards...meaningful conceptual content in reading instruction increases motivation for reading and text comprehension
- Affording students choices of texts, responses, or partners during instruction. Choice leads to ownership and higher motivation

Four principles for creating engaged readers (cont.)

- Have an abundance of interesting texts available at the right reading level for every student. Students more readily read text they can read fluently.
- Allow students the opportunity to work collaboratively with ample opportunities for discussion, questioning, and sharing

Methods used in CORI to increase reading comprehension

Explicitly taught six comprehension strategies over a six week period, then practiced integrating their use over another six weeks.

The strategies taught were:

activating background knowledge

questioning

searching for information

summarizing

organizing graphically

identifying story structure

Methods used in CORI to increase reading comprehension

Created an engaging reading content by teaching strategies in order to accomplish content goals in a life science unit called ‘Survival of Life on Land and Water’

Engagement features

“Knowledge content goals provide motivation for students because they provide a purpose for using strategies, such as questioning”

Methods used in CORI to increase reading comprehension

Engagement features (cont.)

Students were given individual choices about which birds or animals to study in depth and which information books to read on the topic.

“Hands on Activites” were used to provide experiences and knowledge that were followed by opportunities to read

“when students dissect an owl pellet, subsequent reading about owls and the food web in which they exist is energized, long lived, and cognitively sophisticated”

Methods used in CORI to increase reading comprehension

Engagement features (cont.)

Had an abundance of interesting texts available for reading. Texts at several different levels of difficulty were available on each topic

Students worked collaboratively on a variety of reading and study projects

“Students motivation for using complex comprehension strategies is increased when they are afforded opportunities to share their questions, interesting texts, and information being gained”

Methods used in CORI to increase reading comprehension

Engagement features (cont.)

Students were given individual choices about which birds or animals to study in depth and which information books to read on the topic. Books on the same topic were available at different levels of difficulty

“Hands on Activities” were used to provide experiences and knowledge that were followed by opportunities to read

Comment from discussion of comprehension outcomes of CORI in comparison to strategy instruction alone..

“the practice of using content goals for reading instruction is motivating because such goals provide fascinating topics for reading (e.g., animal competition and survival in a harsh environment). As such, these topics provide mastery goals for students and thereby increase interest and motivation.”

Guthrie, J.T. (et al.) (2004). Increasing reading comprehension and engagement through concept-oriented reading instruction. *Journal of Educational Psychology*, 96, 403-421.

Questions/Discussion

www.fcrr.org

Science of reading section

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